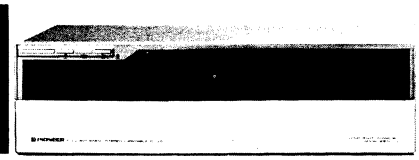
PIONEER®

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS



ORDER NO.
ARP-216-0

STEREO TURNTABLE

PL-X5

MODEL PL-X5 COMES IN FIVE VERSIONS DISTINGUISHED AS FOLLOWS.

Type	Voltage	Remarks
HE	220V and 240V (Switchable)	Europe model
HB	220V and 240V (Switchable)	U. K. model
S	110V, 120V, 220V, 240V (Switchable)	General export model
KU	120V only	U. S. A. model
S/G	110V, 120V, 220V, 240V (Switchable)	U. S. military model

- This is the service manual for model PL-X5/HE, HB, S and KU. For servicing of S/G type, please refer to the additional service manual.
- The operational description for the PL-X5 is basically the same as for the PL-X50 so refer to the PL-X50 service manual (ART-698).
- The major component assembly/disassembly for the PL-X5 are the same as for the PL-X7 so refer to the PL-X7 service manual (ARP-235).
- Ce manuel d'instruction se refère au mode de réglage, en français.
- Este manual de servicio trata del método de ajuste esrito en español.

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1.SPECIFICATIONS

Motor and Turntable

Drive System ..... Belt-drive
Motor ..... DC motor
Turntable Platter ..... 180 mm diam. aluminum alloy die-cast
Speeds ..... 33-1/3 and 45 rpm
Wow and Flutter ..... Less than 0.045% (WRMS) ±0.065% WTD Peak (DIN)
Signal-to-Noise Ratio ..... More than 70 dB (DIN-B) (with Pioneer cartridge model PC-220)

Tonearm

Type ..... Integrated straight pipe arm

PC-220 Specifications

Type ..... Moving magnet type
Stylus ..... 0.6 mil diamond (PN-220)
Output Voltage ..... 2.5 mV (1kHz, 5cm/s LAT, Peak)
Tracking Force ..... 1.7 g to 2.3 g (proper 2 g)
Frequency Response ..... 10 to 30,000 Hz
Recommended Load ..... 50 kΩ
Weight ..... 5.5 g

Subfunctions

Full auto functions based on a motor specially designed for the tonearm
Auto disc size selector (17 cm, 30 cm)
Arm elevation mechanism
Built-in anti-skating

Miscellaneous

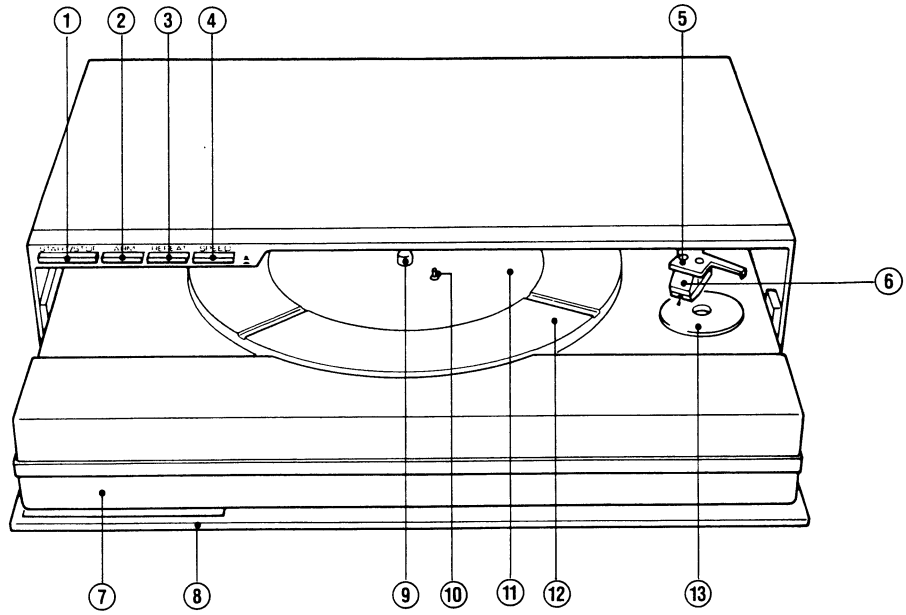
Power Requirements ..... AC 220/240V (switchable), 50, 60 Hz
Power Consumption ..... 9 W
Dimensions ..... 320 (W) x 98 (H) x 210 (D) mm 12-5/8 (W) x 4-1/4 (H) x 8-1/4 (D) in.
Weight ..... 5.5 kg/12 lb 2 oz

Accessories

EP Adapter 1
Operating Instructions 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

2.FRONT PANEL FACILITIES



① START/STOP SWITCH

Press this to start or stop record play.

② ARM ELEVATION SWITCH

- Use the switch to manual play.
- Use the switch to suspend record play temporarily.
- Use the switch when changing the tracks during actual play.

[▼] (depressed position):
The tonearm rises (the stylus moves away from the record).
[▼] (released position):
The tonearm descends (the stylus is lowered onto the record).

③ REPEAT SWITCH

Set this switch for repeat play.

④ SPEED SWITCH

Set this switch in accordance with the speed of the record which is to be played.
[33] (released position): For 33-1/3 rpm record.
[45] (depressed position): For 45 rpm record.

⑤ HEADSHELL, TONEARM

⑥ CARTRIDGE (PC-220)

⑦ SLIDE BASE

⑧ DOOR

⑨ PLATTER SHAFT

⑩ RECORD SENSING PIN

This pin checks that a record is actually on the platter.

⑪ PLATTER

⑫ RUBBER MAT

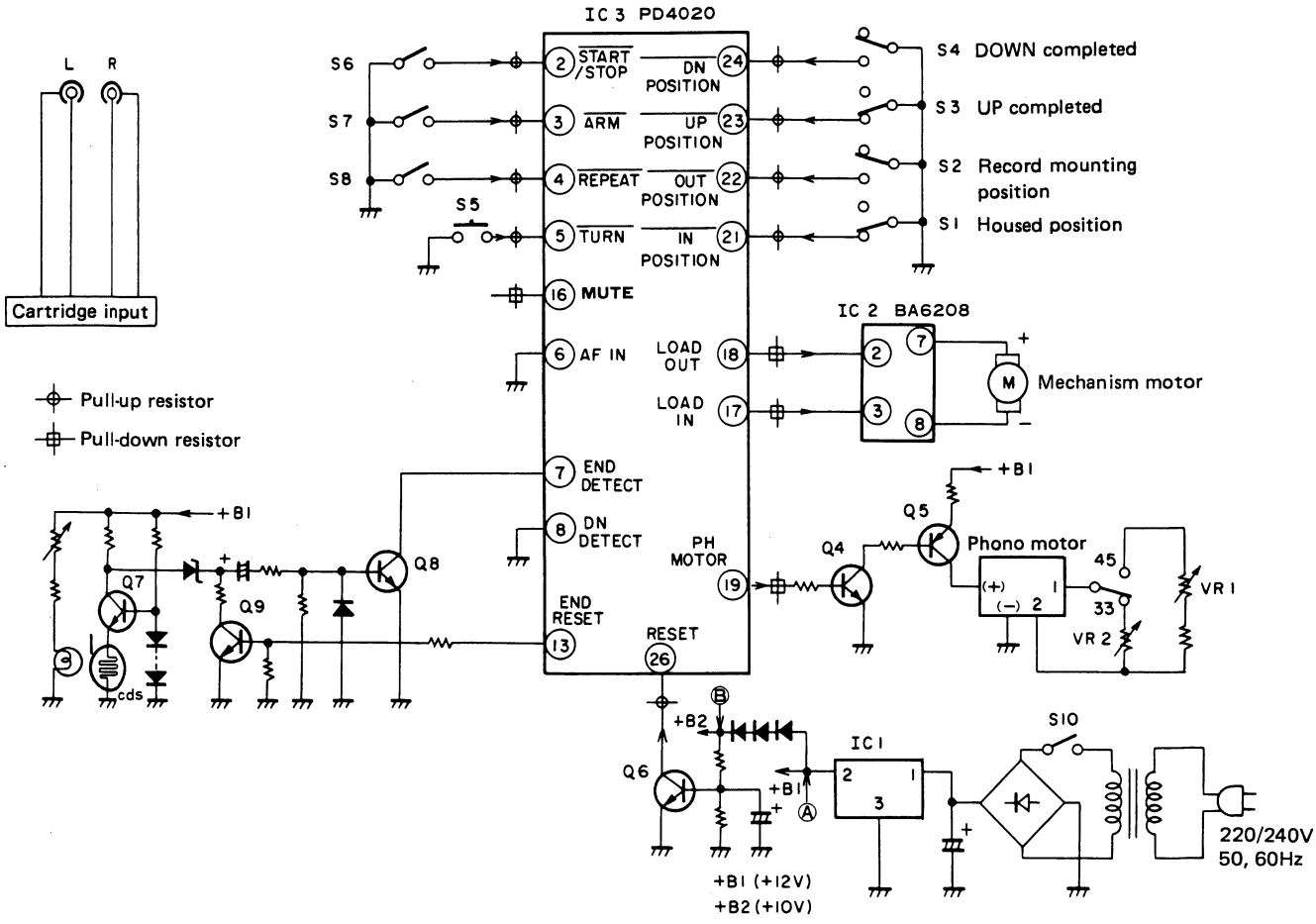
NOTE:
Always use the rubber mat which is supplied as an accessory with this unit. Using any other mat will cause the stylus tip height to change and may result in malfunctioning.

⑬ EP ADAPTER/ADAPTER HOLDER

Slide the EP adapter over the platter shaft when the record you want to play does not have a "middle." Keep the adapter on the holder when it is not in use.

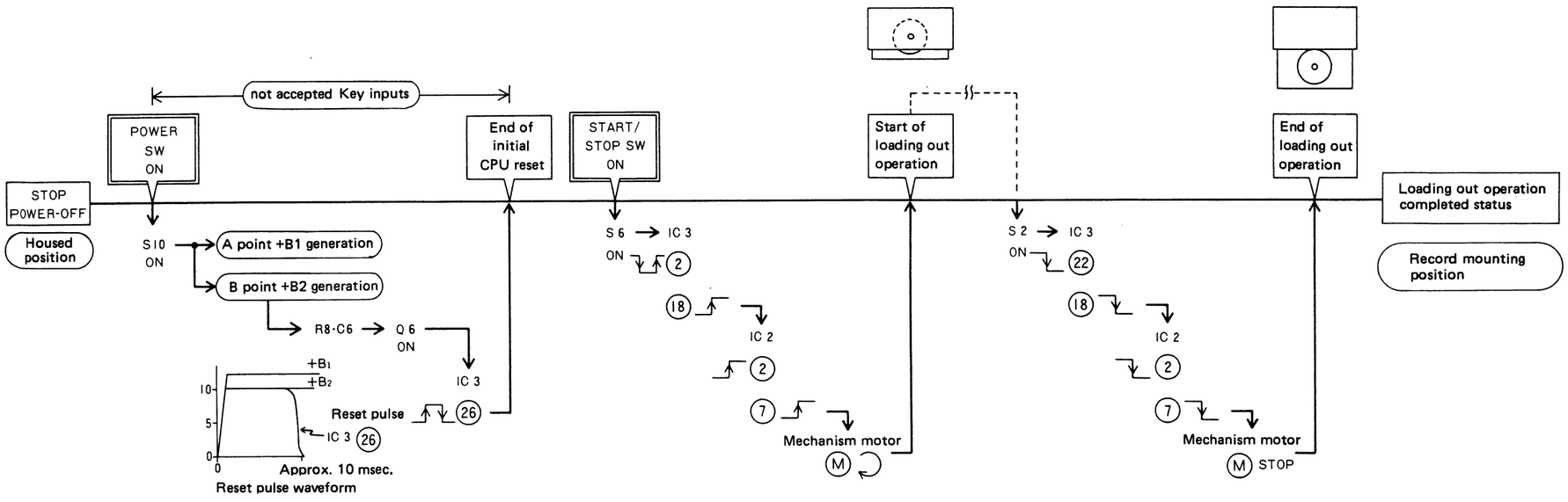
NOTE:
Make sure that you use the EP adapter which is supplied with this unit. Using any other adapter may invite contact with the stylus, with the result that the stylus may be damaged.

3.BLOCK DIAGRAM

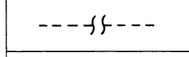
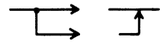
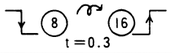
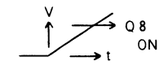


4.CIRCUIT DESCRIPTIONS

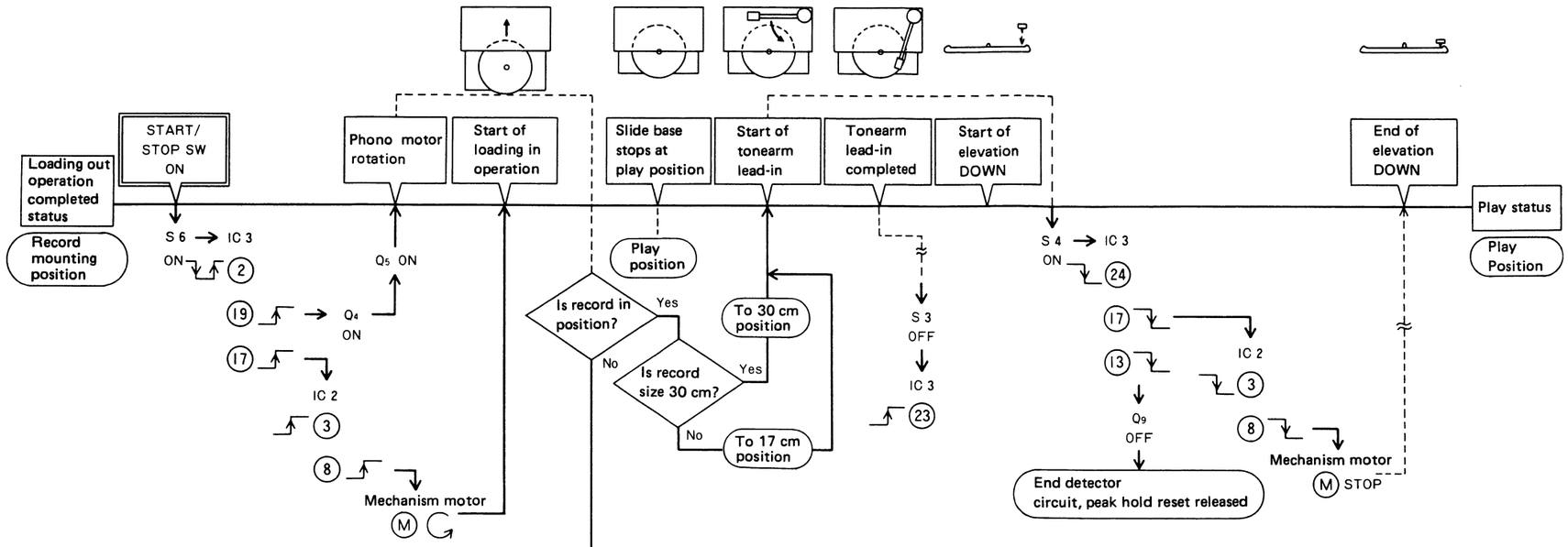
4.1 LOADING OUT OPERATION



Symbol	Symbol Meaning
	● Manual operation
	● Points of specific operation or status
	● Status at start or end of operation
	● Level switched from L to H
	● Level switched from H to L
IC 3 (2) (18)	● Pulse signal applied to pin (2) of IC3, and pin (18) switched from L to H level.

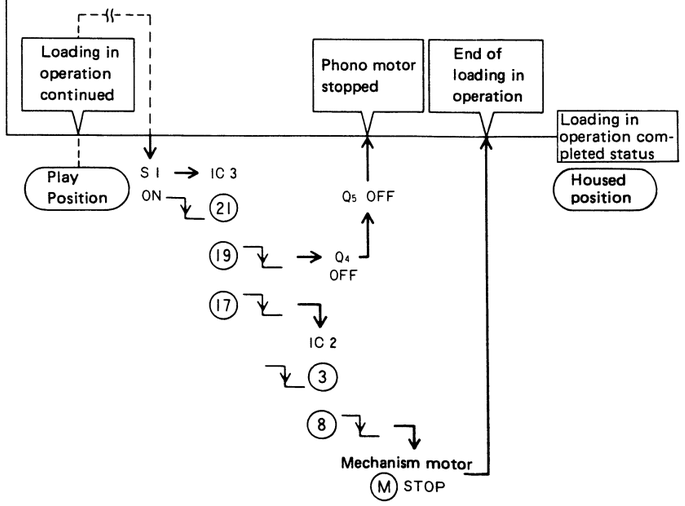
Symbol	Symbol Meaning
	● Denotes passage of time
	● Branching and mixing
 (8) (16) t = 0.3	● Pin (16) switched to H level t seconds after pin (8) is switched to L level.
 V, Q 8 ON, t	● Q8 turned ON when steadily increased voltage reaches a specific level (indicated by arrow intersection).

4. 2 AUTO LEAD-IN OPERATION

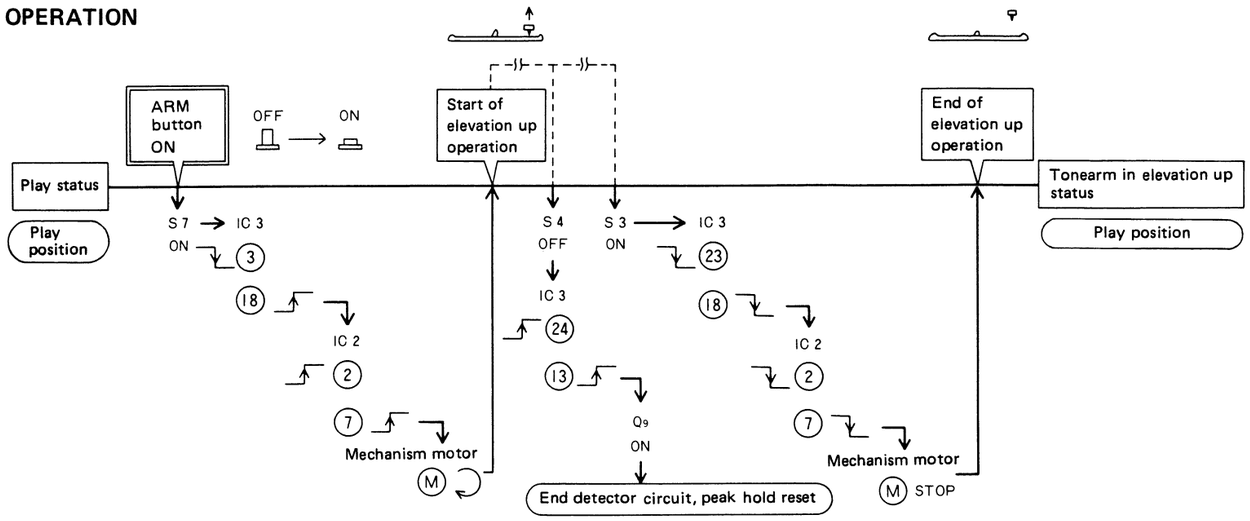


4. 3 LOADING IN OPERATION

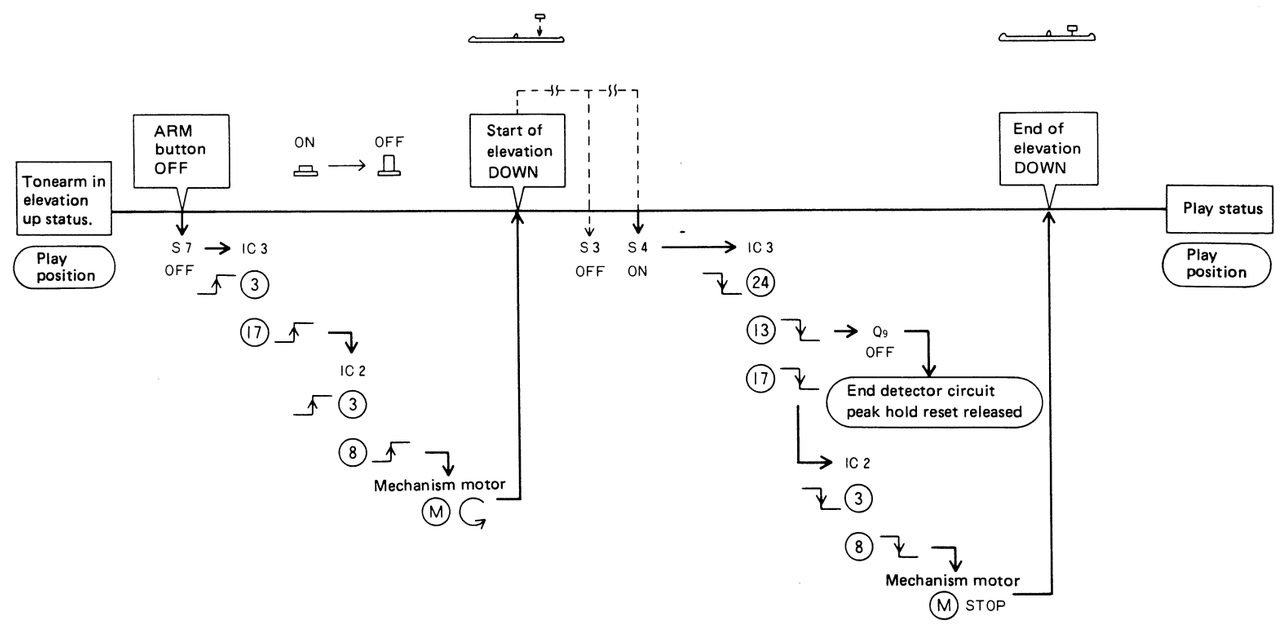
Loading in operation continued



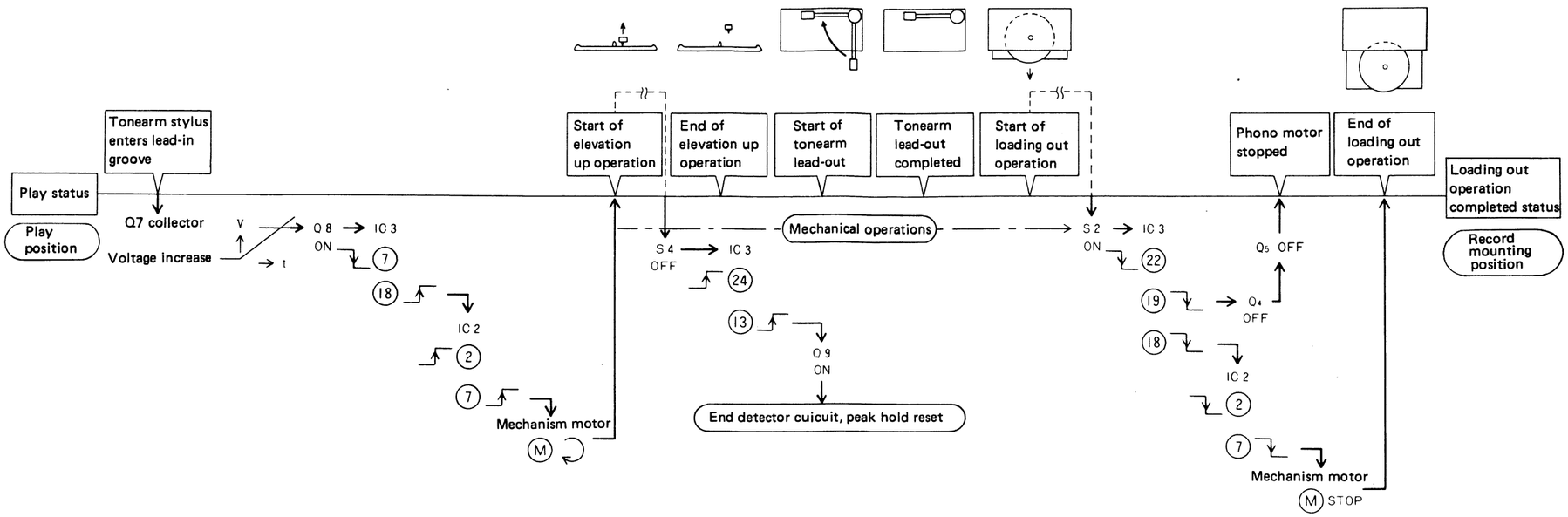
4.4 ARM ELEVATION UP OPERATION



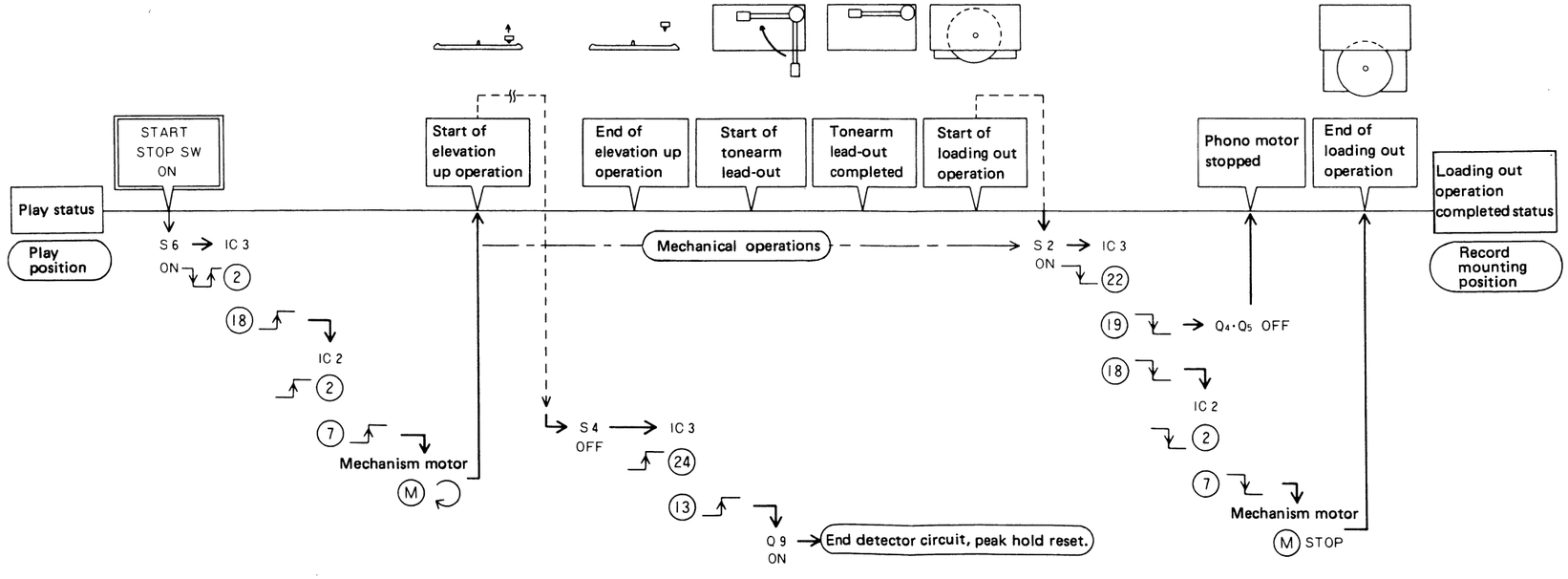
4.5 ARM ELEVATION DOWN OPERATION



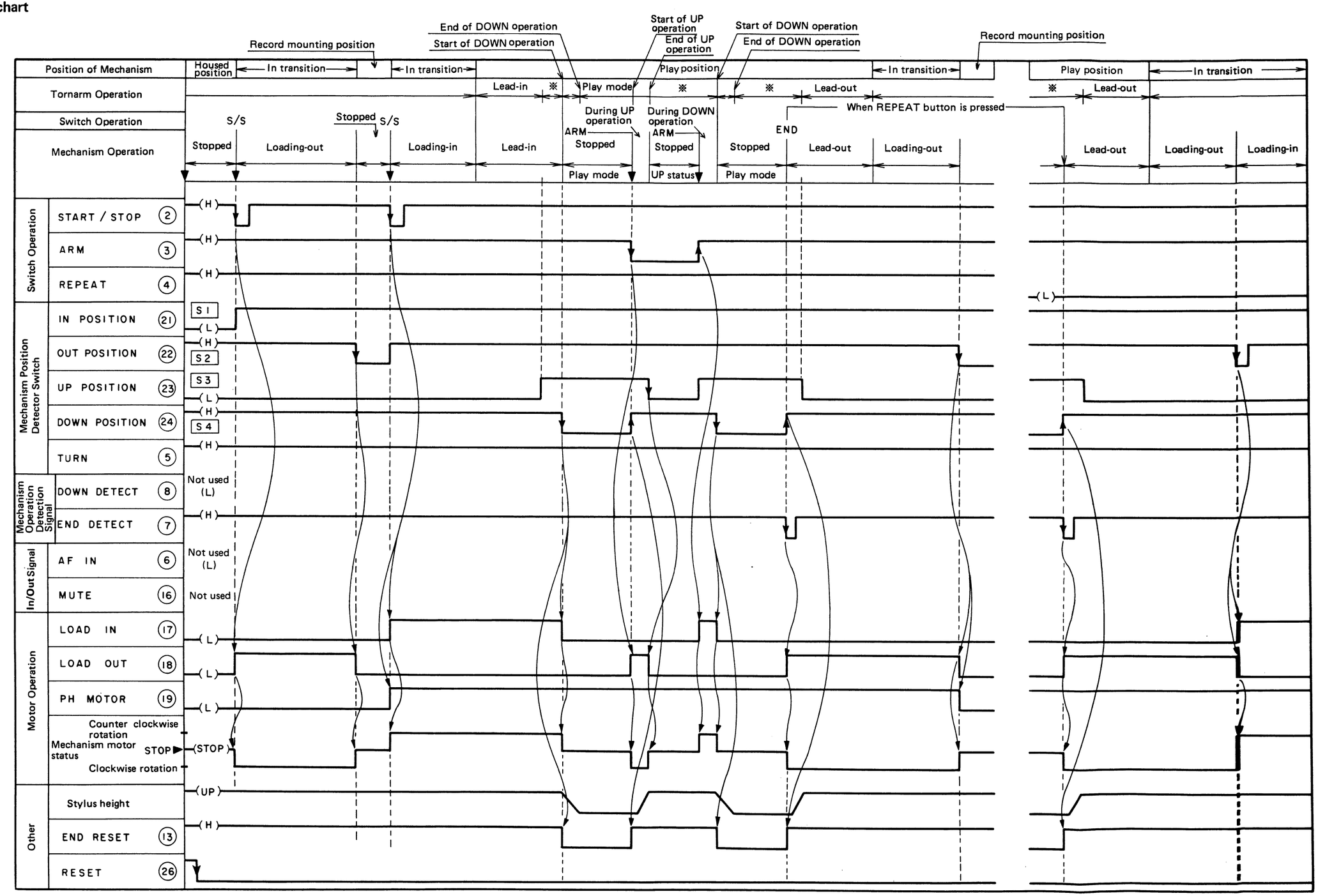
4.6 AUTO RETURN OPERATION



4.7 AUTO STOP OPERATION



- **Timing chart**



PD4020 Pin Description

Pin No.	Pin Name	I/O	Symbol	Pin description		
1	CLOCK I	–	CL 1	Clock pin 1 (150kHz to 440kHz)		
2	START/STOP	Input	PC 0	Start/stop switch input	OFF	ON
3	ARM		PC 1	Arm elevation switch input	DOWN	UP
4	REPEAT		PC 2	Repeat switch input	OFF	ON
5	TURN		PC 3	Inverter switch input	OFF	ON
6	AF IN		PD 0	Not used (fixed at L level)		
7	END DETECT		PD 1	End detector input	Not detected	Detected
8	DOWN DETECT		PD 2	Not used (fixed at L level)		
9			PD 3			
10			PE 0			
11			PE 1			
12			PE 2			
13	END RESET	Output	PE 3	End detector circuit peak hold reset output	Not reset	Reset
14	Vss	–	Vss	+10V		
15	TEST	–	TEST	Not used (fixed at H level)		
16	MUTE	Output	PF 0	Not used		
17	LOAD IN		PF 1	Mechanism motor loading in output	No loading in	Loading in operation
18	LOAD OUT		PF 2	Mechanism motor loading out output	No loading out	Loading out operation
19	PH MOTOR		PF 3	Phono motor rotation output	Stopped	Rotating
20			PG 0			
21	IN POSITION	Input	PA 0	Housed position detector input	Not housed	Housed
22	OUT POSITION		PA 1	Record mounting position detector input	Not mounting	Mounting
23	UP POSITION		PA 2	UP completed position detector input	Not in UP position	In UP position
24	DOWN POSITION		PA 3	DOWN completed position detector input	Not in DOWN position	In DOWN position
25	INTERRUPT	–	INT	Not used (fixed at H level)		
26	RESET	Input	RES	Initial CPU reset input	Reset	Normal
27	Vgg	–	Vgg	GND		
28	CLOCK 0	–	CL 0	Clock pin 0 (150kHz to 440kHz)		

BA6208 Pin Description

Pin No.	Pin Name	I/O	Symbol
1	NC		Vacant pin
2	B IN	Input	Loading out input
3	A IN		Loading in input
4	NC		Vacant pin
5	GND	—	
6	Vcc	—	+12V
7	B OUT	Output	Loading motor rotated clockwise by H level output
8	A OUT		Loading motor rotated counter clockwise by H level output
9	NC		Vacant pin

IN		OUT	
3	2	8	7
L	L	open	open
L	H	L	H
H	L	H	L
H	H	L	L

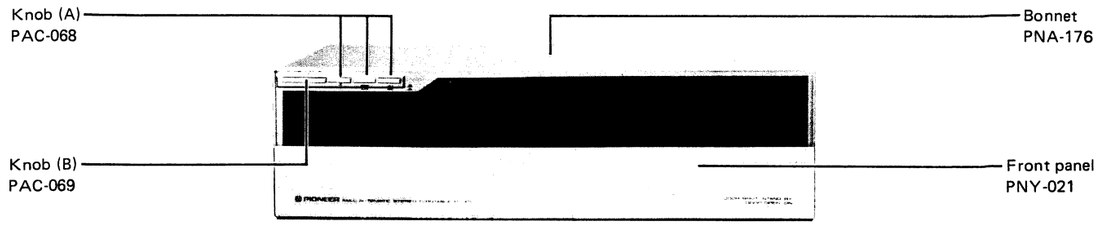
(H input voltage: 2.0V min.
L input voltage: 0.8V max.)

5.PARTS LOCATION

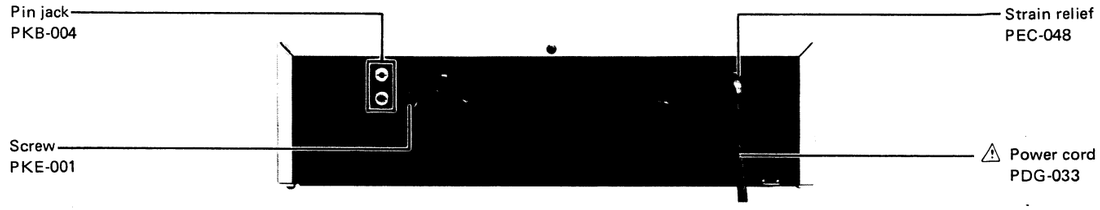
NOTES:

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

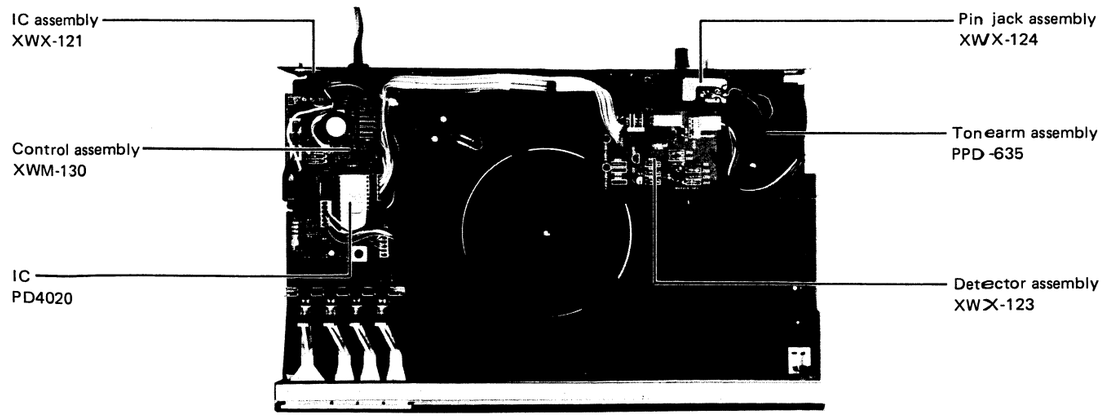
Front Panel View



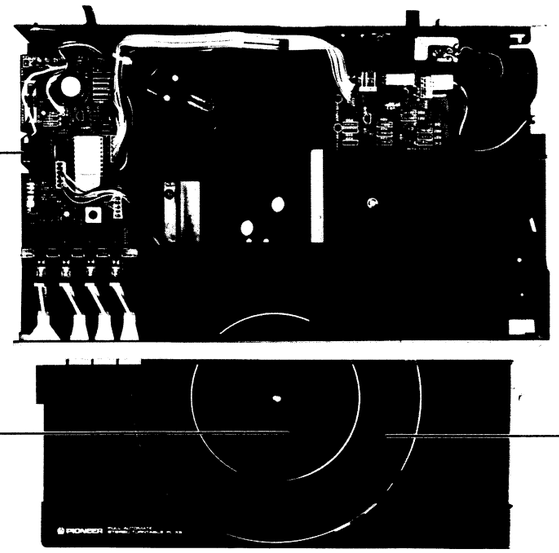
Rear Panel View



Top View with Bonnet Removed I



Top View with Bonnet Removed II



6.ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
  560Ω 56 × 10¹ 561 ..... RD¼PS 5610 J
  47kΩ 47 × 10³ 473 ..... RD¼PS 4703 J
  0.5Ω 0R5 ..... RN2H 0R50 K
  1Ω 010 ..... RS1P 0100 K
  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
  5.62kΩ 562 × 10¹ 5621 .... RN¼SR 5621 F
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Miscellaneous Parts

Mark	Part No.	Symbol & Description	Mark	Part No.	Symbol & Description
	XWM-130	Control assembly	⚠	PTT-161	Power Transformer (240V –220V)
	XWX-123	Detector assembly	⚠	PSB-013	Line voltage selector
	XWX-121	IC assembly		PXM-100	Motor
	XWS-019	Switch assembly B		PSF-019	Microswitch (Power)
	XWX-124	Pin jack assembly			
	XWS-018	Switch assembly A			
	PWM-131	Sensor assembly			

CONTROL ASSEMBLY (XWM-130)

CAPACITORS

Mark	Part No.	Symbol & Description
	CKDYF 473Z 50	C1
	PCL-043	C2
	CEA 100M 16L	C3, C5, C6
	CKDYF 103Z 50	C4

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	PCP-067	VR1 Semi-fixed
	(PCP-068)	
	PCP-069	VR2 Semi-fixed
	RS2PFL 220J	R7
	RGSD6X223J	R12, R14
	RGSD4X223J	R13
	RD¼PM □□□J	R5, R6, R8 ~ R10

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	BA6208	IC2
	PD4020	IC3
	2SC1815	Q4, Q6
	(2SC2458)	
	(2SC945)	
	2SA562TM	Q5
	WL02	D1
	1S2473-T	D2 ~ D4

SWITCHES, OTHERS

Mark	Part No.	Symbol & Description
	PSG-034	S6 ~ 9
	LAL03T220K	L1
	PTL-015	L2 OSC coil

DETECTOR ASSEMBLY (XWX-123)

CAPACITOR, RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	CSZA 6R8K 16	C8
	PCP-044	VR3 Semi-fixed
	RS1PF 101J	R20
	RN¼PR 1503F	R27
	RD¼PM □□□J	R21 ~ R26

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	2SC1815	Q7, Q9
	(2SC2458)	
	(2SC945)	
	2SC945	Q8
	VD1222	D7, D8
	RD3. 6EB	D9
	1S2473	D10

IC ASSEMBLY (XWX-121)

Mark	Part No.	Symbol & Description
	μPC78M12H	IC1

SWITCH ASSEMBLY B (XWS-019)

Mark	Part No.	Symbol & Description
	PSG-025	S5

PIN JACK ASSEMBLY (XWX-124)

Mark	Part No.	Symbol & Description
	PKB-004	Pin jack
	PDF-133	GND unit

SWITCH ASSEMBLY A (XWS-018)

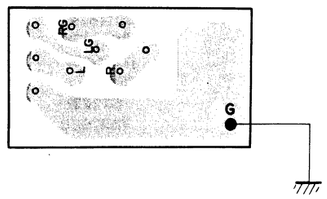
Mark	Part No.	Symbol & Description
	PSH-005	S1, S2
	PSH-006	S3, S4
	PDE-207	Connector assembly

SENSOR ASSEMBLY (PWM-131)

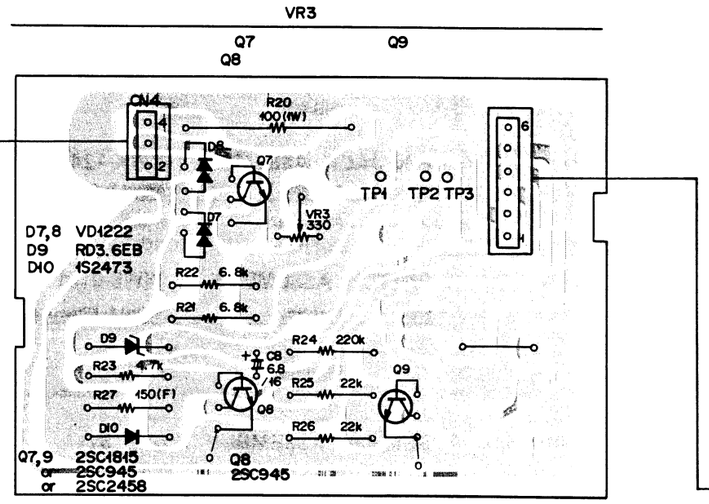
Mark	Part No.	Symbol & Description
	PEL-048	Lamp
	PCX-031	Cds
	PDE-104	Connector assembly

7.P.C. BOARDS CONNECTION DIAGRAM

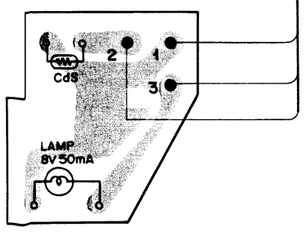
PIN JACK
Ass'y
(XWX-124)



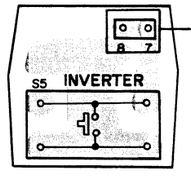
DETECTOR Ass'y(XWX-123)



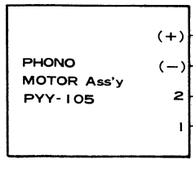
SENSOR Ass'y(PWM-131)



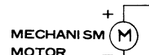
SWITCH Ass'y(B)
(XWS-019)



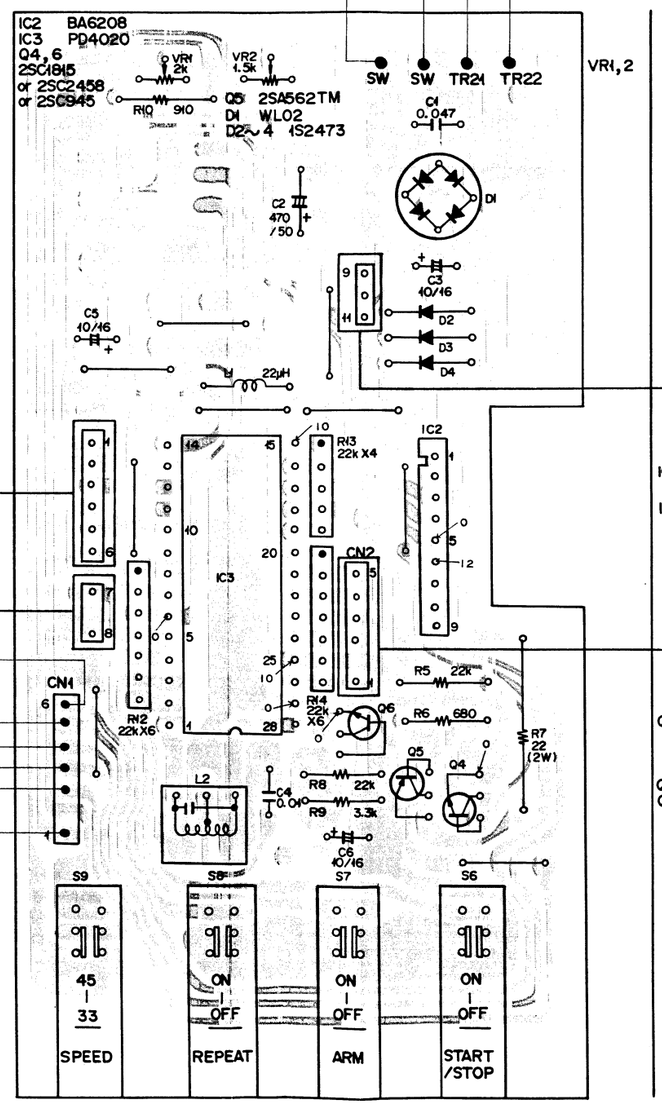
PHONO
MOTOR Ass'y
PYY-105



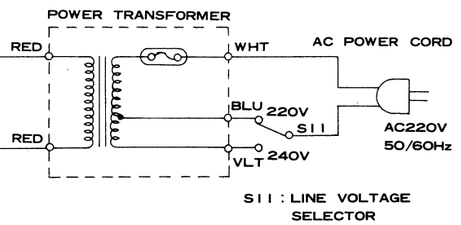
MECHANISM MOTOR
PXM-100



CONTROL Ass'y(XWM-130)



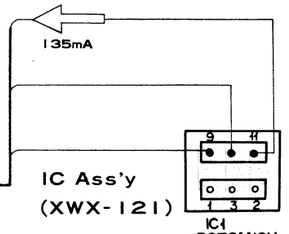
POWER TRANSFORMER



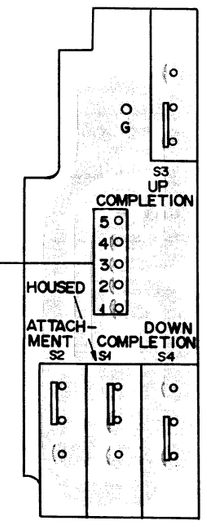
S10 : POWER

S11 : LINE VOLTAGE SELECTOR

IC Ass'y
(XWX-121)

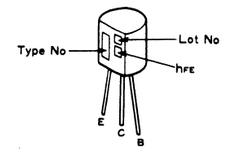


SWITCH Ass'y(A)
(XWS-018)

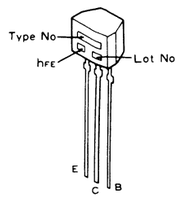


External Appearance of Transistors & ICs.

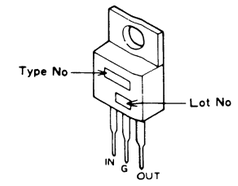
2SA562TM
2SC945
2SC1815



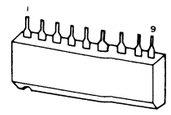
2SC2458



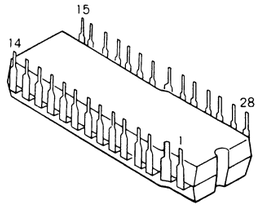
μPC78M12H



BA6208

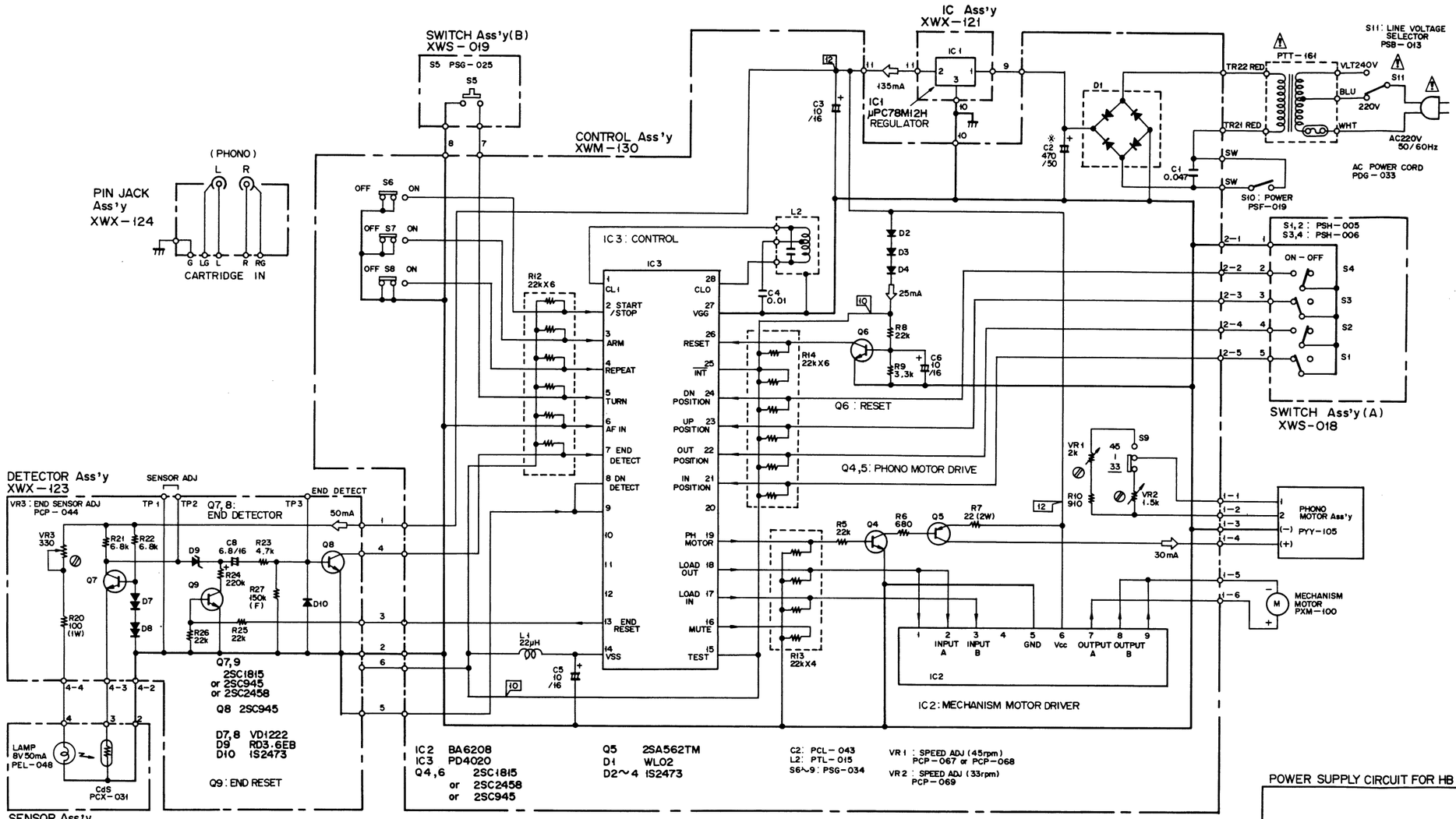


PD4020



8.SCHEMATIC DIAGRAM

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



1. RESISTORS.
Indicated in Ω, ¼W, ⅛ W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT.
; DC voltage (V)
⇦mA; DC current

4. OTHERS:
⊘ ; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

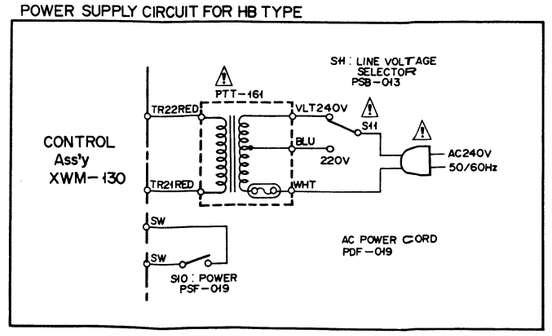
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

S1 : HOUSED	ON	OFF
S2 : ATTACHMENT	ON	OFF
S3 : UP COMPLETION	ON	OFF
S4 : DOWN COMPLETION	ON	OFF
S5 : INVERTER	ON	OFF
S6 : START/STOP	ON	OFF
S7 : ARM	ON	OFF
S8 : REPEAT	ON	OFF
S9 : SPEED	33 1/3rpm	45rpm
S10 : POWER	ON	OFF
S11 : LINE VOLTAGE SELECTOR	220V	240V

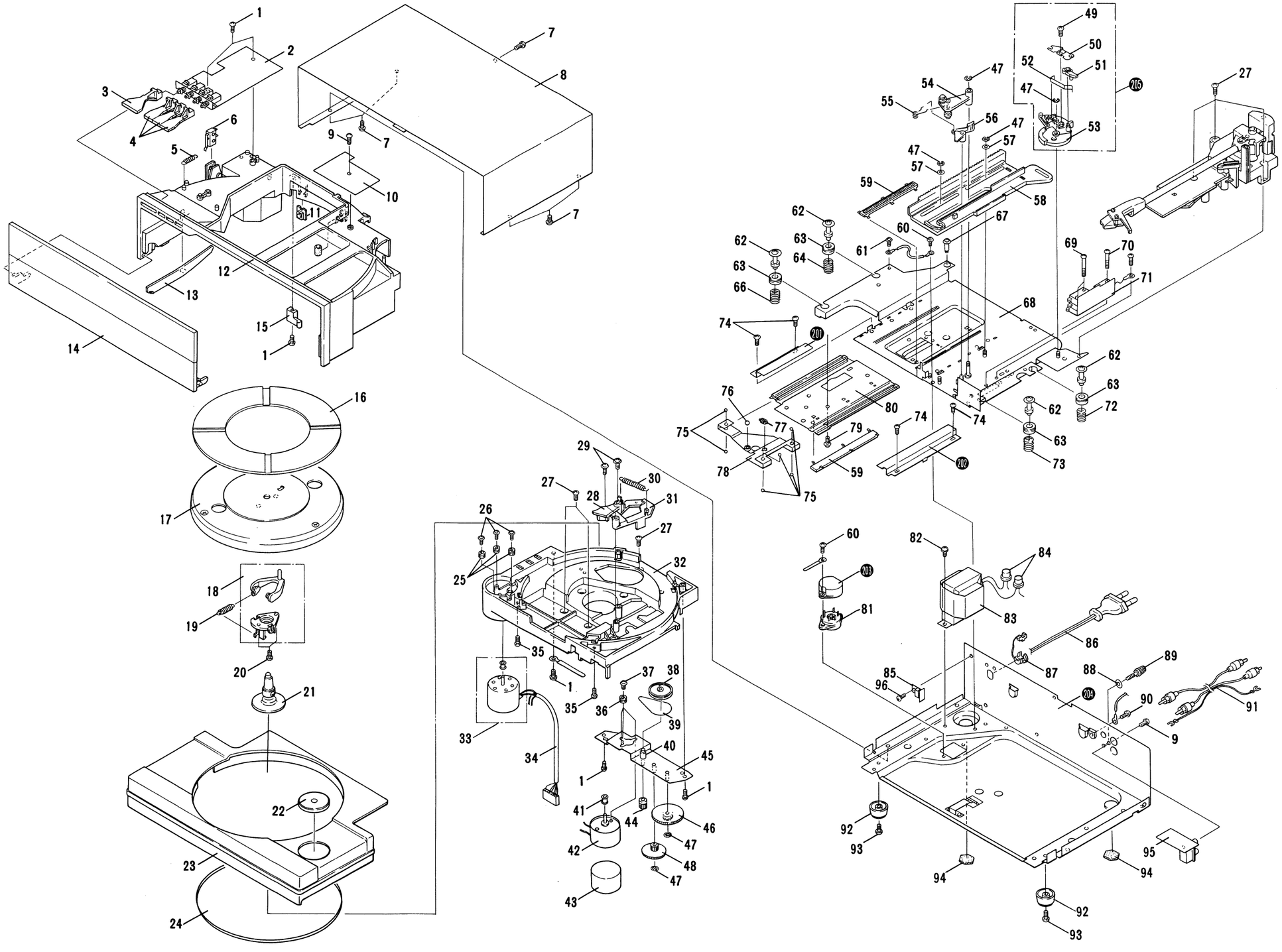
The underlined indicates the switch position.

POWER SUPPLY CIRCUIT FOR HB TYPE



9.EXPLODED VIEW

9.1 EXTERIOR



NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Parts List

Mark	No.	Part No.	Description
	1.	PPZ30P080FMC	Screw
	2.	XWM-130	Control assembly
	3.	PAC-069	Knob (B)
	4.	PAC-068	Knob (A)
	5.	PBH-303	Spring
	6.	PSF-019	Micro switch
	7.	VTZ30P060FZK	Screw
	8.	PNA-176	Bonnet
	9.	PPZ30P080FZK	Screw
	10.	XWX-123	Detector assembly
	11.	XWS-019	Switch assembly B
	12.	PXB-303	Escutcheon assembly
	13.	PNX-225	Power switch lever
	14.	PNY-021	Front panel
	15.	PNX-316	Plate
	16.	PEA-062	Rubber mat assembly
	17.	PXB-225	Turntable platter assembly
	18.	PXB-261	Sensing pin assembly
	19.	PBH-298	Spring
	20.	PMB30P080FMC	Screw
	21.	PXB-236	Shaft assembly
	22.	PLX-442	EP adaptor
	23.	PNY-022	Slide base cover
	24.	PEB-183	Belt
	25.	PEB-172	Rubber cushion
	26.	PBA-112	Screw
	27.	VDZ30P060FMC	Screw
	28.	PNX-238	Record load sensor plate
	29.	IPZ30P080FMC	Screw
	30.	PBH-300	Reset lever spring
	31.	PNX-239	Reset plate
	32.	PNX-221	Slide base
	33.	PYY-105	Motor assembly
	34.	PDE-119	Connector assembly (M)
	35.	PPZ30P120FZK	Screw
	36.	PEB-184	Rubber cushion
	37.	PBA-125	Screw
	38.	PNX-308	Pulley
	39.	PEB-185	Belt
	40.	PLB-127	Gear A shaft
	41.	PLM-006	Motor pulley
	42.	PXM-100	Motor
	43.	PNC-199	Shield plate
	44.	PNX-240	Gear (A)
	45.	PXT-455	Chassis unit

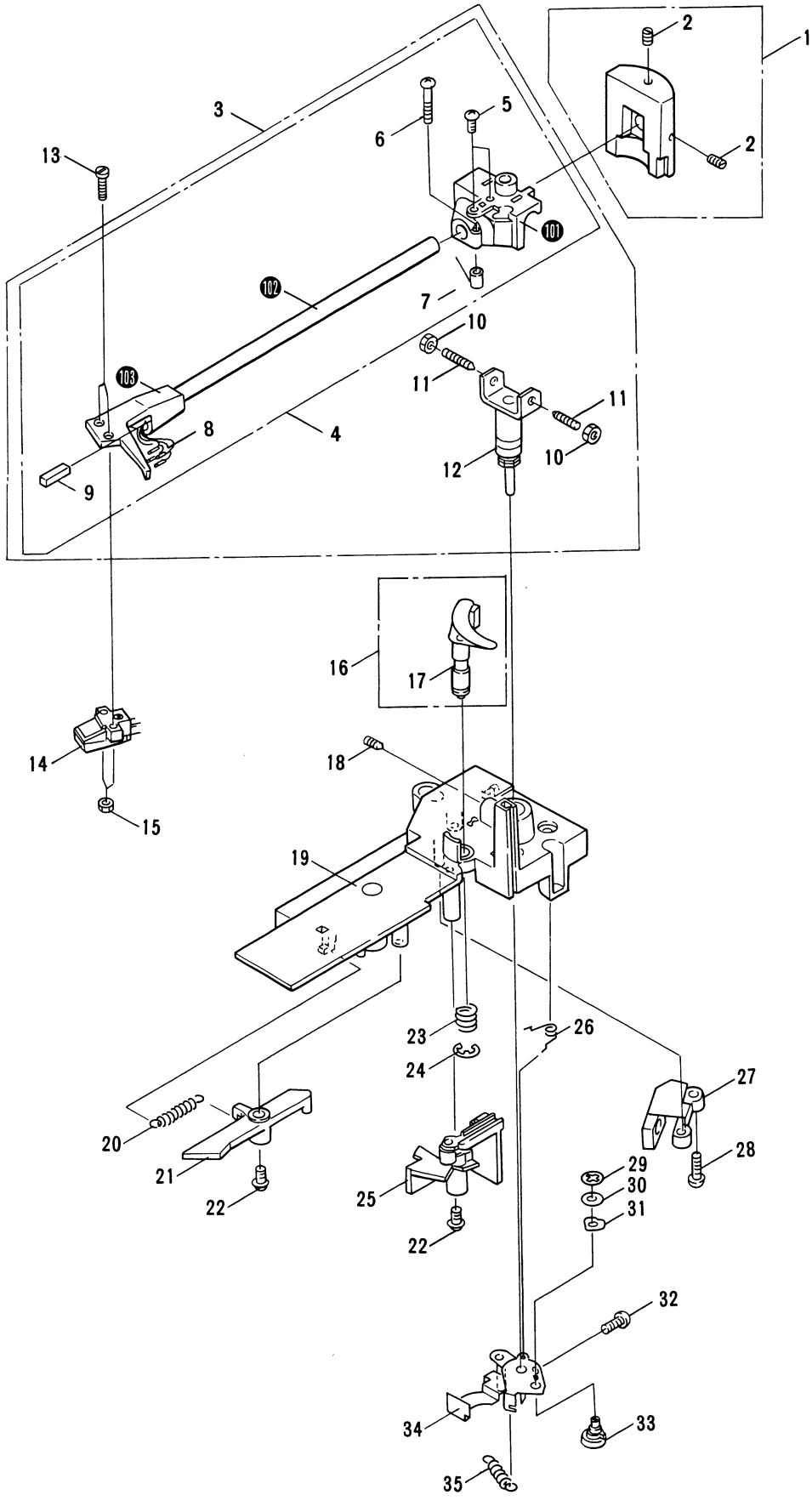
Mark	No.	Part No.	Description
	46.	PNX-306	Gear (C)
	47.	YE30S	Washer
	48.	PNX-241	Gear (B)
	49.	PPZ30P050FMC	
	50.	PNC-198	Holder
	51.	PNX-237	Lead in ratch
	52.	PBK-051	Plate spring
	53.	PNX-236	Driving plate
	54.	PXB-256	Lock lever assembly
	55.	PBH-354	Spring
	56.	PNX-234	Lock lever reset plate
	57.	WA41D065D025	Washer
	58.	PNX-233	Rack gear
	59.	PNX-232	Slide rail rack
	60.	PDZ30P060FMC	Screw
	61.	VDZ30P060FZK	Screw
	62.	PBA-121	Screw
	63.	PEB-240	Damper rubber
	64.	PBH-318	Spring (C)
	65.	. . . . .	
	66.	PBH-317	Spring (B)
	67.	PBA-148	Screw
	68.	PXV-005	Float base unit
	69.	PBA-139	Screw
	70.	PBA-138	Screw
	71.	XWS-018	Switch assembly A
	72.	PBH-310	Spring (A)
	73.	PBH-323	Spring (D)
	74.	VDZ30P060FZK	Screw
	75.		Steel ball 4φ
	76.		Steel ball 5.5φ
	77.	RNX-231	Gear
	78.	PNX-230	Retainer
	79.	LMZ30P080FMC	Screw
	80.	PNC-228	Slide rail
⚠	81.	PSB-013	Line voltage selector
	82.	PMA40P050FMC	Screw
⚠	83.	PTT-161	Power transformer (240—220V)
⚠	84.	PBM-008	Wire nut
	85.	XWX-121	IC assembly
⚠	86.	PDG-033	Power cord (HE)
		PDF-190	Power cord assembly (HB)
	87.	PEC-048	Strain relief
	88.	WA35F100N080	Washer
	89.	PKE-001	Screw
	90.	IDZ30P060FZK	Screw

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	91.	PDE-195	PU cord		201.		Rail cover (R)
	92.	PEC-072	Foot		202.		Rail cover (L)
	93.	VTZ30P100FMC	Screw		203.		Line Voltage soket cover
	94.	PEC-082	Stopper		204.		Under-base unit
	95.	XWX-124	Pin jack assembly		205.		Driving plate assembly
	96.	PDZ30P060FZK	Screw				

9.2 TONEARM

Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	PNR-534	Weight		21.	PNX-229	Reset lever
	2.	ZMK50H100FBT	Screw		22.	IPZ30P080FMC	Screw
	3.	PPD-635	Tonearm assembly		23.	PBH-237	EV. spring
	4.	PXB-547	Pipe holder assembly		24.	YE70S	Washer
	5.	NB30FZB	Screw		25.	PXB-235	Index cam assembly
	6.	KMZ30M160FZB	Screw		26.	PBH-297	As spring
	7.	PNW-702	EV chip		27.	PWM-131	Sensing assembly
	8.	PDF-556	Terminal chip unit		28.	PPZ30P080FMC	Screw
	9.	PED-508	Lead wire holder		29.	YS40S	Washer
	10.	NB30FZB	Nut		30	WC40FMC	Flat washer
	11.	PLA-580	Pivot		31.	PNC-227	PU spring washer
	12.	PXA-878	Holder assembly		32.	ZMD40H060FMC	Screw
	13.	PBA-147	Cartridge mounting screw		33.	PNX-228	Cam
	14.	PPB-936	Cartridge assembly		34.	PXB-251	PU plate assembly
	15.	PBN-902	Cartridge mounting nut		35.	PBH-299	Spring
	16.	PXB-253	EV sheet assembly		101.		Pipe holder
	17.	PXT-449	EV sheet unit		102.		Arm pipe
	18.	ZM040H100FZK	Screw		103.		Head shell
	19	PNX-223	Tonearm base				
	20.	PBH-300	Reset lever spring				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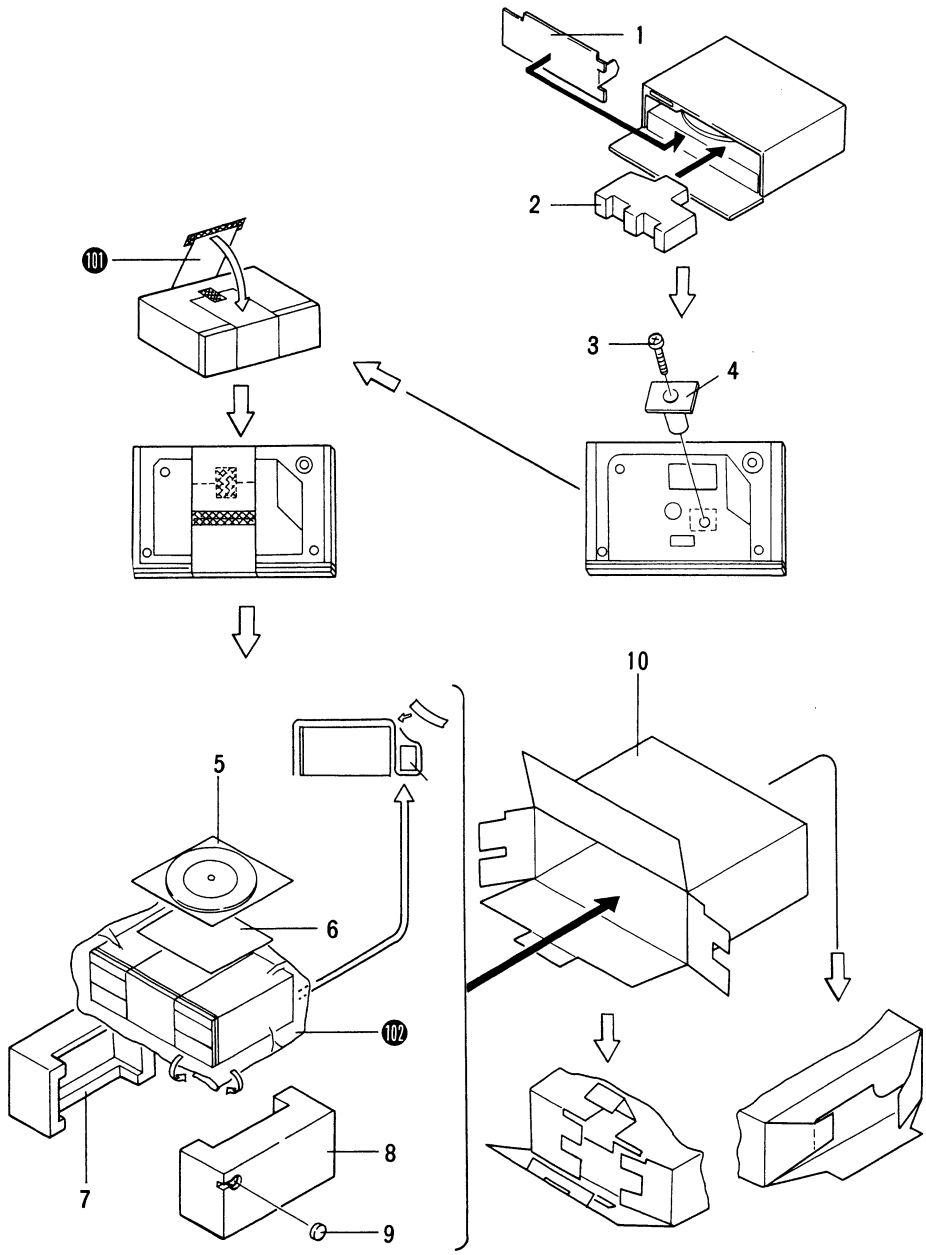
10.PACKING

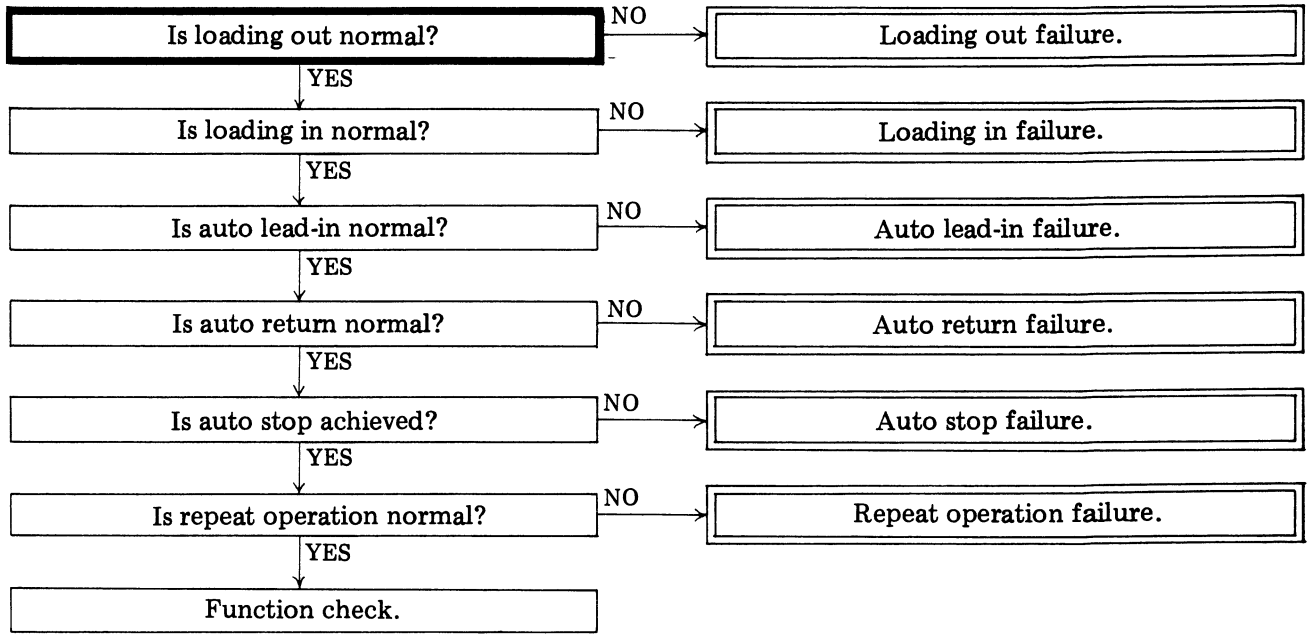


Mark	No.	Part No.	Description
	1.	PHC-090	Spacer
	2.	PHA-148	Turntable packing
	3.	PBA-134	Clamp screw
	4.	PNX-365	Clamp spacer
	5.	PEA-062	Rubber mat assembly
	6.	PRE-006	Operating instructions (HE) (English/German/French/Italian)
		PRB-229	Operating instructions (HB) (English)
	7	PHA-129	Protector (L)
	8.	PHA-130	Protector (R)
	9.	PNX-442	45 adaptor
	10.	PHH-024	Packing case
	101.		Sheet
	102.		Sheet

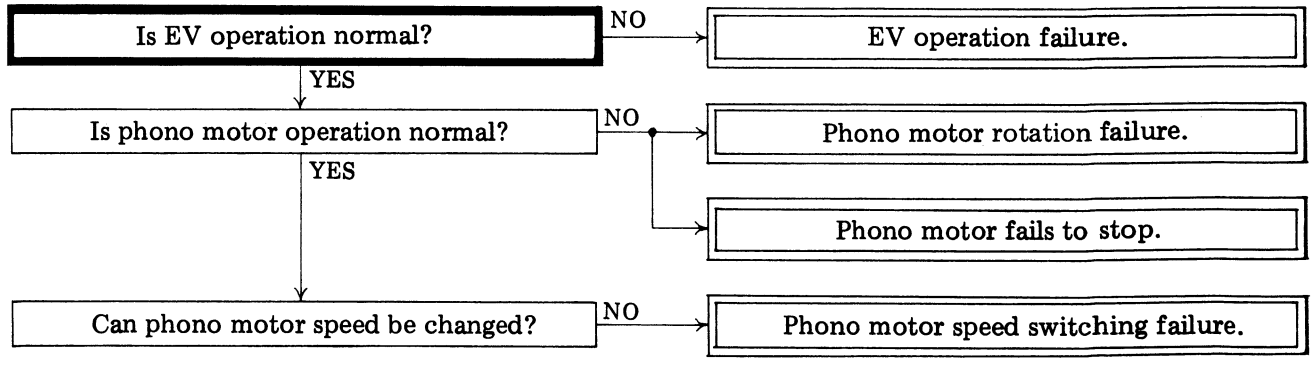
11.TROUBLESHOOTING

* When a PL-X5 requires repair, first locate the position of the trouble from the operational checks outlined below, then proceed with the relevant detailed chart.
Blocks indicated by ▭ denote detailed charts on subsequent page.

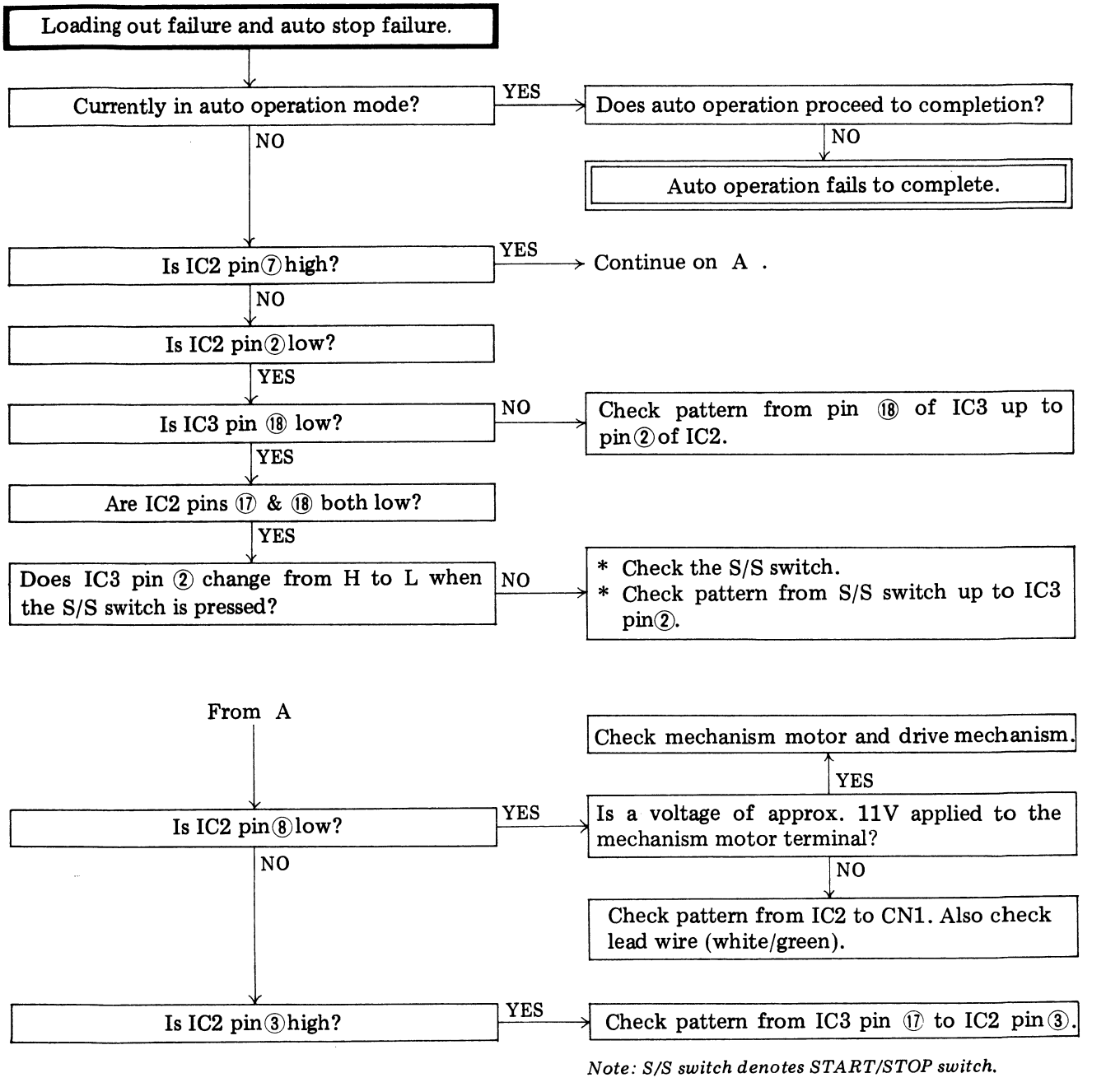
■ Auto Operation Check



■ Function Check

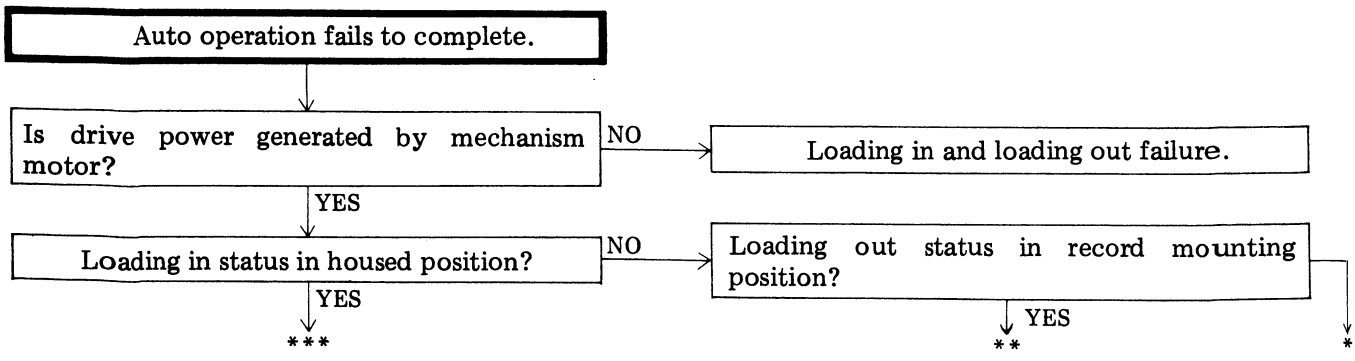


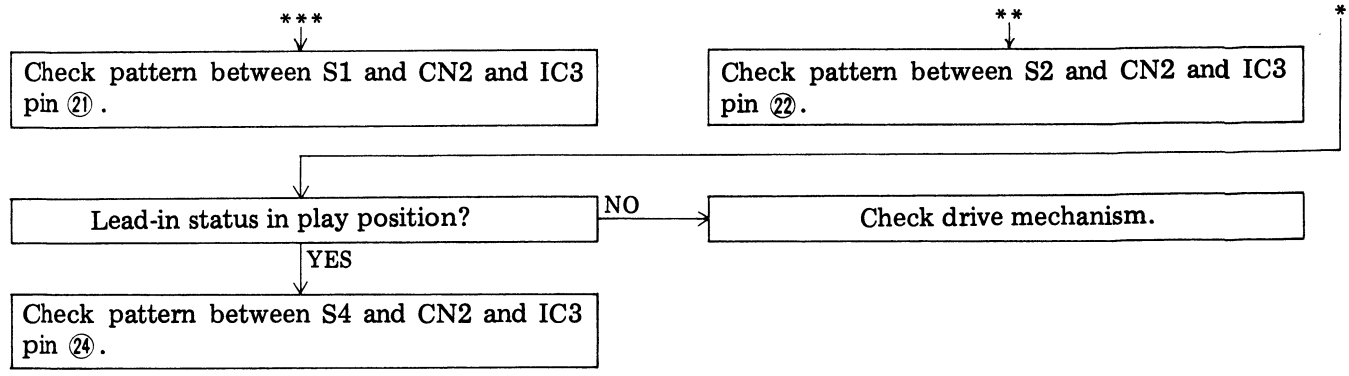
■ Loading Out Failure, and Auto Stop Failure


Loading out failure and auto stop failure.
Currently in auto operation mode?
YES
Does auto operation proceed to completion?
NO
Auto operation fails to complete.
NO
Is IC2 pin⑦high?
YES
Continue on A .
NO
Is IC2 pin②low?
YES
Is IC3 pin ⑱ low?
NO
Check pattern from pin ⑱ of IC3 up to pin②of IC2.
YES
Are IC2 pins ⑰ & ⑱ both low?
YES
Does IC3 pin ② change from H to L when the S/S switch is pressed?
NO
* Check the S/S switch.
* Check pattern from S/S switch up to IC3 pin②.
From A
Check mechanism motor and drive mechanism.
YES
Is IC2 pin⑧low?
YES
Is a voltage of approx. 11V applied to the mechanism motor terminal?
NO
NO
Check pattern from IC2 to CN1. Also check lead wire (white/green).
Is IC2 pin③high?
YES
Check pattern from IC3 pin ⑰ to IC2 pin③.

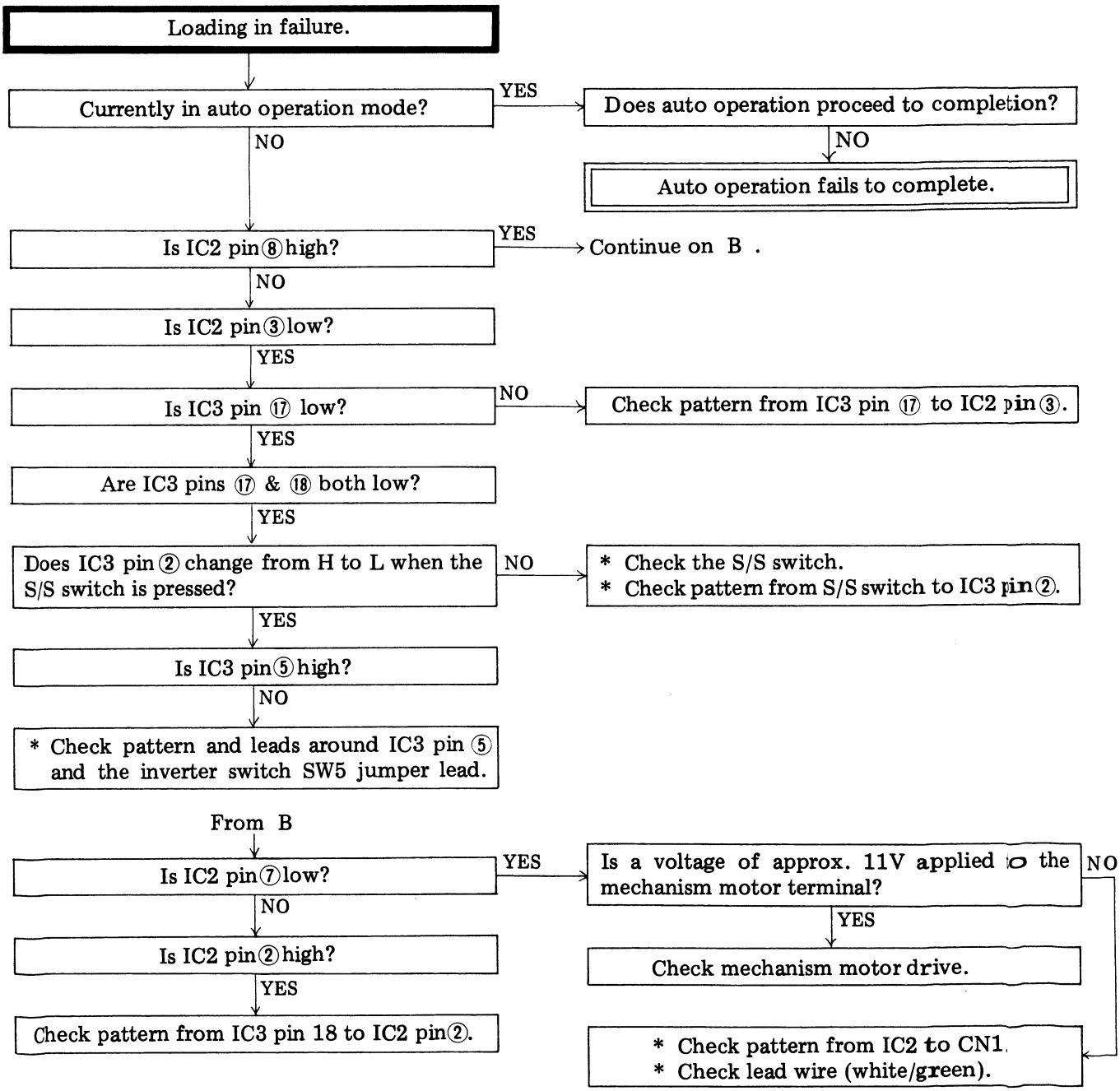
Note: S/S switch denotes START/STOP switch.

■ Auto Operation Fails to Complete

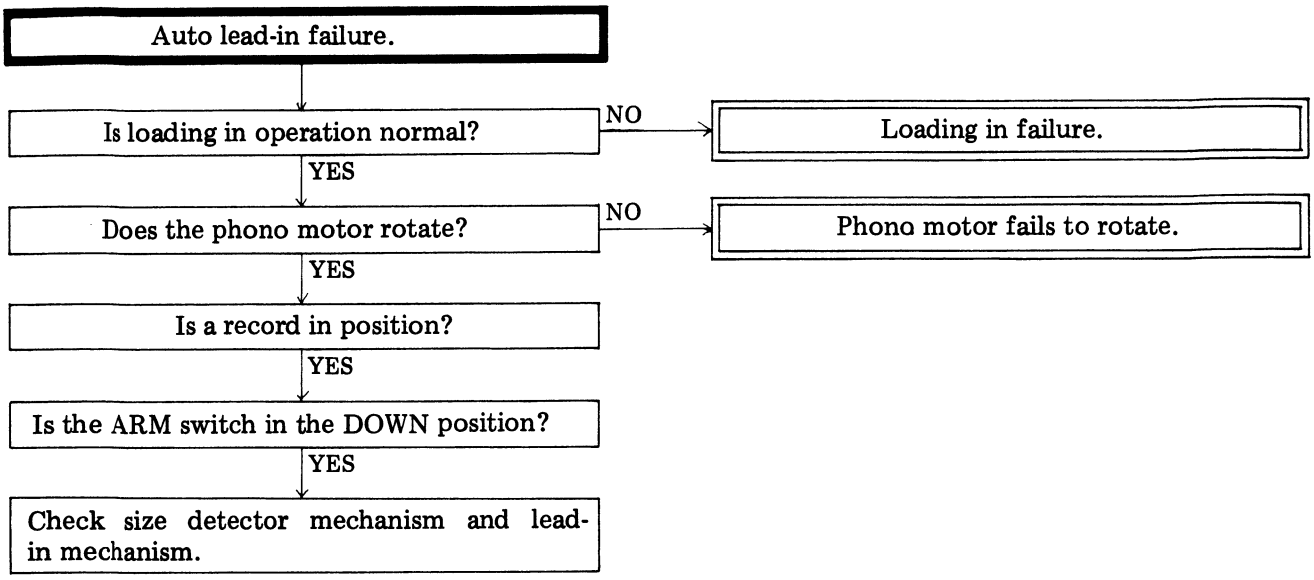



***
Check pattern between S1 and CN2 and IC3 pin ㉑.
**
Check pattern between S2 and CN2 and IC3 pin ㉒.
*
Lead-in status in play position?
NO
Check drive mechanism.
YES
Check pattern between S4 and CN2 and IC3 pin ㉔.

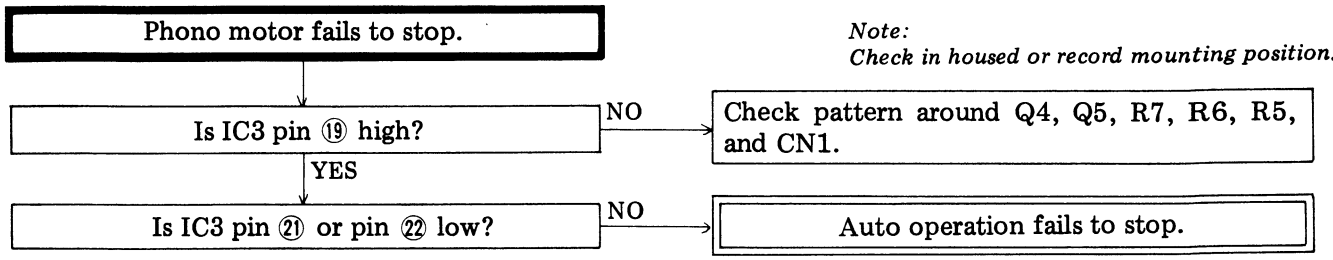
■ **Loading in Failure**


Loading in failure.
Currently in auto operation mode?
YES
Does auto operation proceed to completion?
NO
Auto operation fails to complete.
NO
Is IC2 pin⑧high?
YES
Continue on B .
NO
Is IC2 pin③low?
YES
Is IC3 pin ⑰ low?
NO
Check pattern from IC3 pin ⑰ to IC2 pin③.
YES
Are IC3 pins ⑰ & ⑱ both low?
YES
Does IC3 pin② change from H to L when the S/S switch is pressed?
NO
* Check the S/S switch.
* Check pattern from S/S switch to IC3 pin②.
YES
Is IC3 pin⑤high?
NO
* Check pattern and leads around IC3 pin ⑤ and the inverter switch SW5 jumper lead.
From B
Is IC2 pin⑦low?
YES
Is a voltage of approx. 11V applied to the mechanism motor terminal?
NO
NO
Is IC2 pin②high?
YES
Check mechanism motor drive.
YES
Check pattern from IC3 pin 18 to IC2 pin②.
* Check pattern from IC2 to CN1.
* Check lead wire (white/green).

■ Auto Lead-in Failure

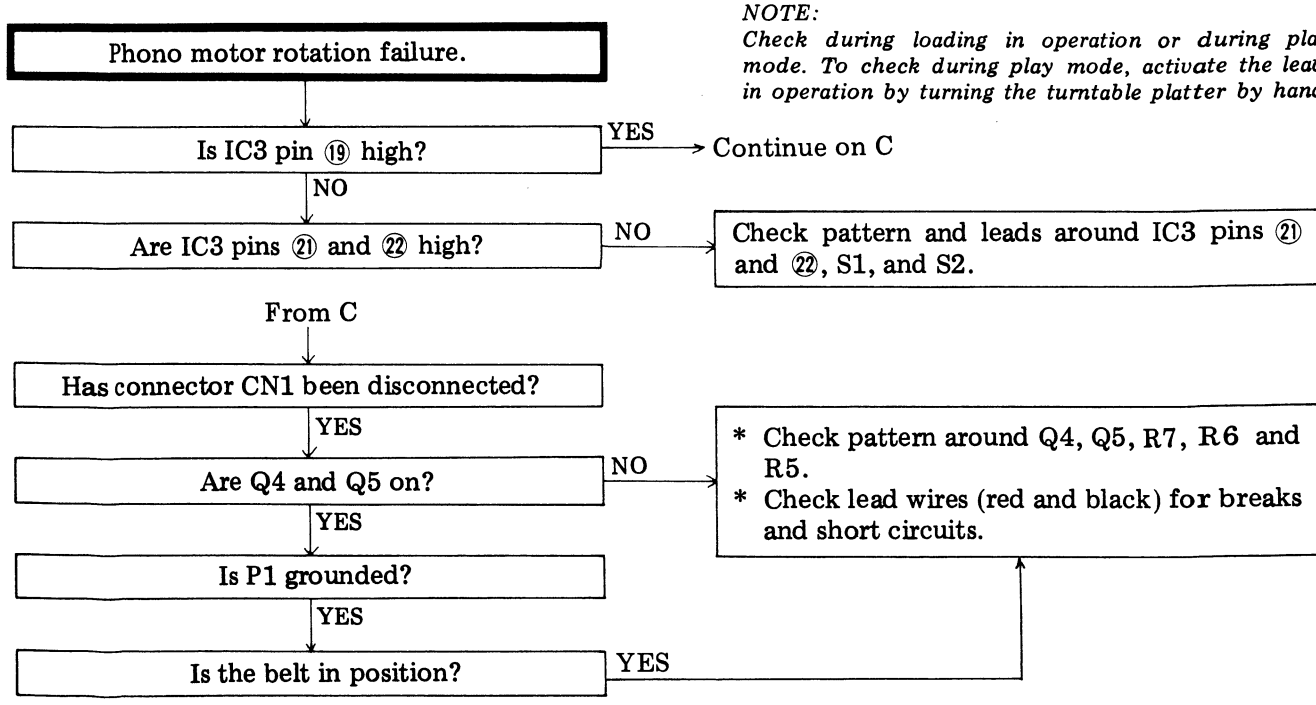


■ Phono Motor Fails to Stop


Phono motor fails to stop.
Is IC3 pin ⑲ high?
NO
Check pattern around Q4, Q5, R7, R6, R5, and CN1.
YES
Is IC3 pin ㉑ or pin ㉒ low?
NO
Auto operation fails to stop.

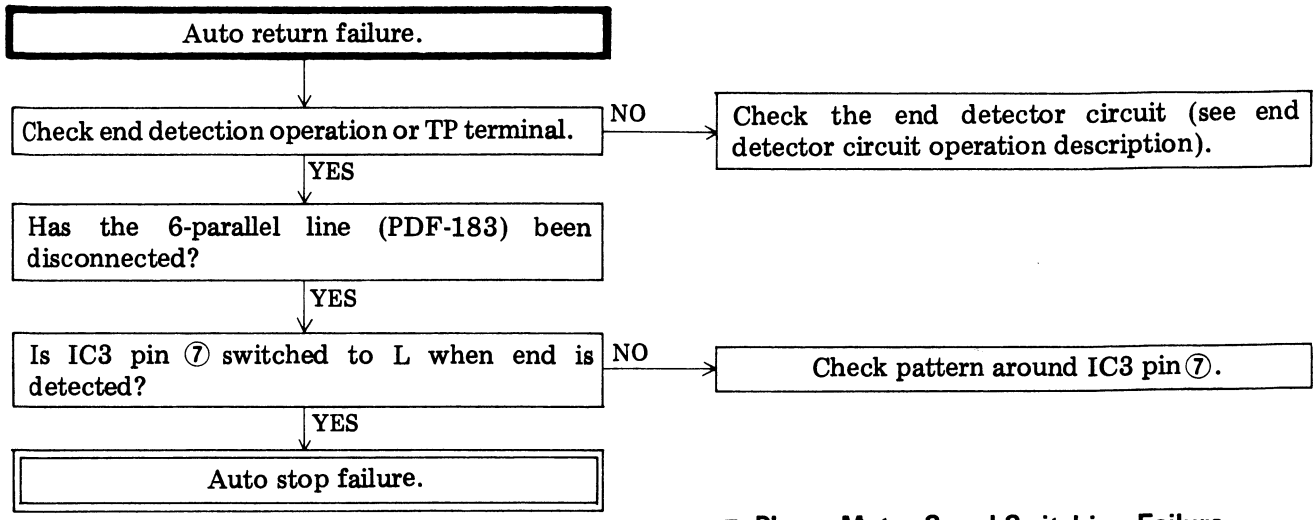
Note:
Check in housed or record mounting position.

■ Phono Motor Rotation Failure

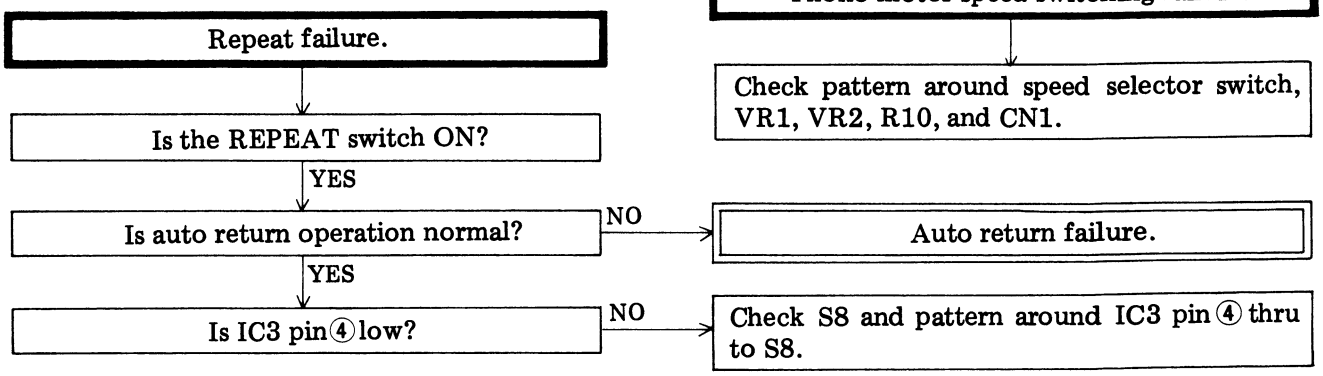

Phono motor rotation failure.
Is IC3 pin ⑲ high?
YES
Continue on C
NO
Are IC3 pins ㉑ and ㉒ high?
NO
Check pattern and leads around IC3 pins ㉑ and ㉒, S1, and S2.
From C
Has connector CN1 been disconnected?
YES
Are Q4 and Q5 on?
NO
* Check pattern around Q4, Q5, R7, R6 and R5.
* Check lead wires (red and black) for breaks and short circuits.
YES
Is P1 grounded?
YES
Is the belt in position?
YES

NOTE:
Check during loading in operation or during play mode. To check during play mode, activate the lead-in operation by turning the turntable platter by hand.

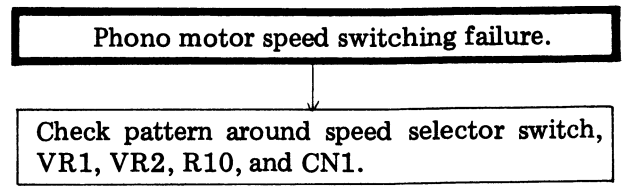
■ Auto Return Failure


Auto return failure.
Check end detection operation or TP terminal.
NO
Check the end detector circuit (see end detector circuit operation description).
YES
Has the 6-parallel line (PDF-183) been disconnected?
YES
Is IC3 pin ⑦ switched to L when end is detected?
NO
Check pattern around IC3 pin⑦.
YES
Auto stop failure.

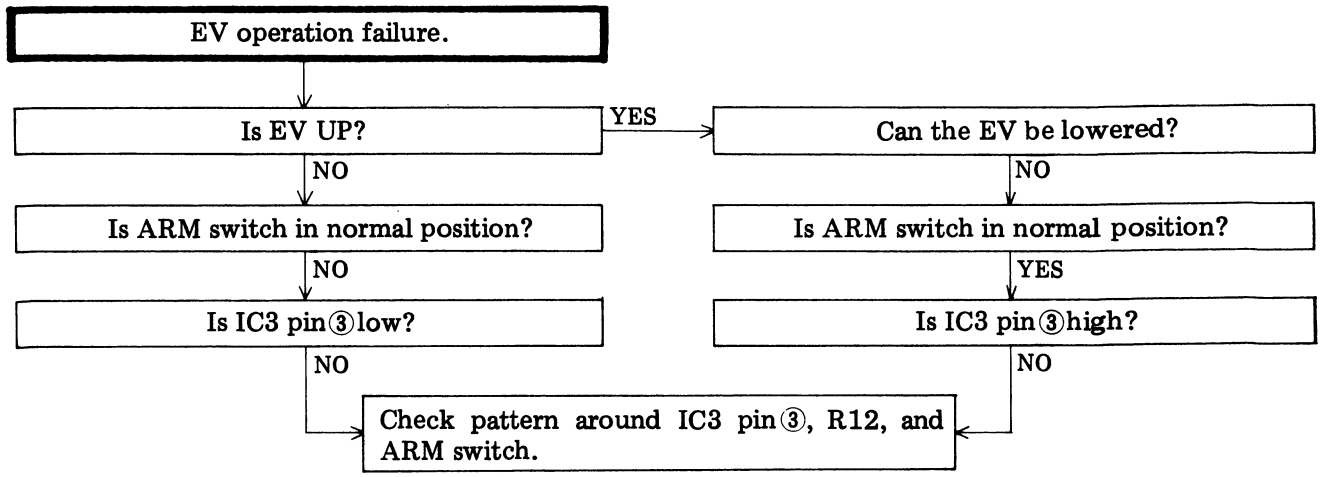
■ Repeat Failure



■ Phono Motor Speed Switching Failure



■ EV Operation Failure



12.ADJUSTMENTS

12.1 ADJUSTMENT OF STYLUS LOWERING POSITION

If the stylus fails to lower onto the correct position on the record during normal play mode, adjust the position by the following procedure. Take care not to damage stylus or record during this adjustment.

1. Press the START/STOP button to start play mode.
2. Observe the direction and degree of displacement (that is, estimate by how many mm the stylus is displaced from the record lead-in groove).
3. Put the arm elevation switch into the [▼] position.
4. Using a small screwdriver, carefully turn the adjustment screw according to the direction and degree of displacement as indicated below.
   - The stylus lowering position is corrected by about 10mmby half a turn of the adjustment screws.
   - If the displacement is towards the outer edge of the record, turn the adjustment screw clockwise as seen from above.
   - If the displacement is towards the center of the record, turn the adjustment screw counter clockwise as seen from above.
5. Check the adjustment
   After completing the adjustment, gently push the head shell in the direction of the arrow, and check that it stops at the position of the outer lead-in groove of the record (the tonearm moves up to the stopped position during play mode).

Adjustment precautions

- Do not turn the turntable upside down, or tip over by a large degree.
- Do not apply very much pressure when turning the adjustment screw.

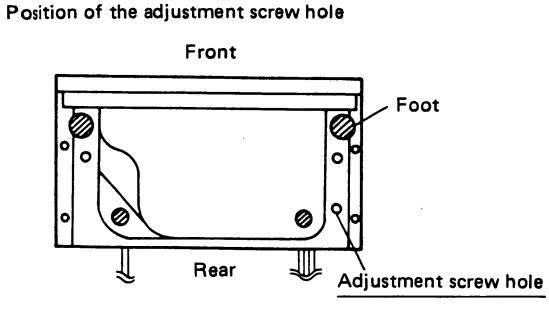


Fig. 12-1 Position of Adjustment Screw Hole

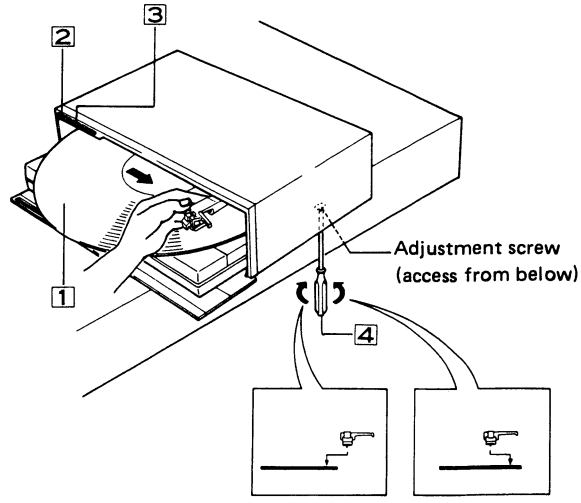


Fig. 12-2 Stylus Lowering Position Adjustment

12.2 ARM ELEVATION HEIGHT ADJUSTMENT

The elevation seat height adjustment is performed by turning the adjustment screw as shown in Fig. 12-2. Turning the screw in a CW direction lowers the height, and turning CCW raises it. The height should be adjusted so the stylus is 7 ±2mm above the record disc. If the height is too low, the stylus could possibly drag on the record during its return movement. This adjustment is not normally required, however, it should be made prior to adjusting the stylus lowering position when necessary.

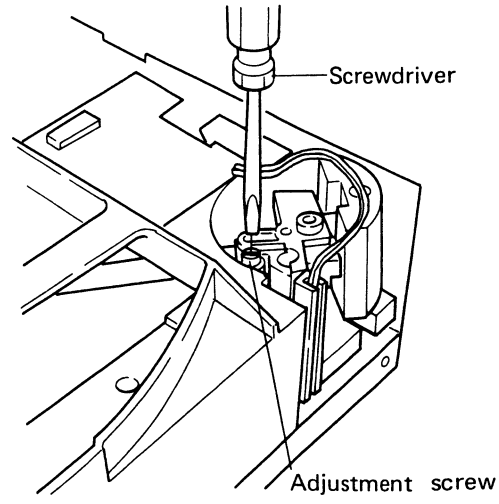


Fig. 12-2 Arm elevation height adjustment

12. 3 END DETECTOR CIRCUIT ADJUSTMENT

1. Always adjust the stylus lowering position before adjusting the end detector circuit.
   Remove the bonnet from the main turntable cabinet.
2. Put the PL-X5 into play mode, and then switch the power off.
   Also disconnect the circuit board ass'y connector (CN) to prevent movement in the mechanism and phono motors.
3. Connect a DC voltmeter to the TP1 (GND) and TP2 terminals (see Fig. 12-4).
   Then switch the power back on, and move the tonearm so that the stylus is at a position 47.5 mm from the center spindle. Read the voltage at that time in the voltmenter (see Fig. 12-5).
4. Next move the tonearm stylus tip to a position 57.5 mm from the spindle, and adjust VR3 so that the voltage read at this position is 5.8V ±0.2V lower than the voltage read in step 3 above.

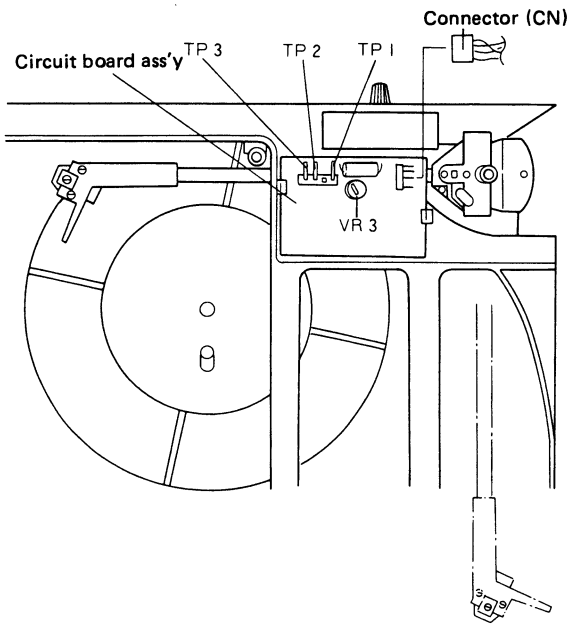


Fig. 12-4 End Detector Adjustment 1

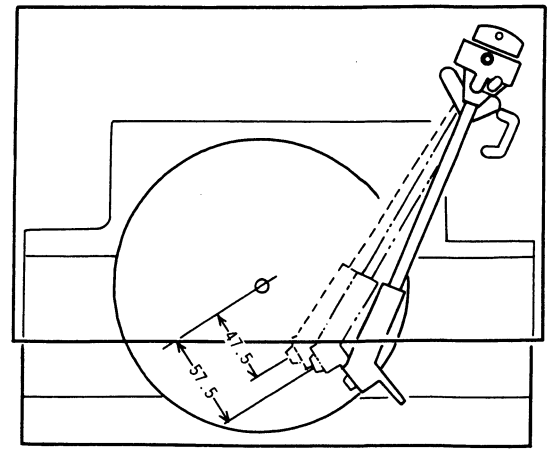


Fig. 12-5 End Detector Adjustment 2

12. 4 PHONO MOTOR SPEED ADJUSTMENT

1. Place a strobo scope on the turntable platter, and switch the power on.
2. Adjust the speed adjustment VR from the rear of the PL-X5. Short circuiting of the VR to the rear panel via the screwdriver during this adjustment can result in a change in the speed setting. If using a metallic screwdriver, it is recommended that the shaft of the driver be wound with insulating tape, and that direct contact between driver and rear panel be avoided. (See Fig. 12-6).

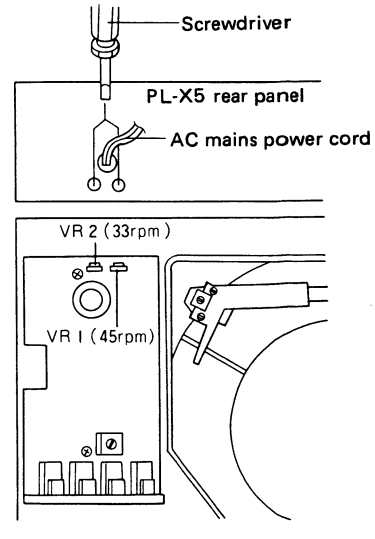


Fig. 12-6 Phono Motor Speed Adjustment

12. RÉGLAGE

12.1 RÉGLAGE DE LA POSITION BASSE DE LA POINTE DE LECTURE

Si la pointe de lecture ne s'abaisse pas à l'endroit exact sur le disque pendant les lectures normales, régler la position de la manière suivante en prenant soin de n'endommager ni la pointe ni le disque pendant le réglage.

1. Presser la touche DEPART/ARRET pour mettre l'appareil en mode de lecture.
2. Observer le degré et la direction de déplacement (c'est-à-dire, estimez en millimètres le déplacement de la pointe à côté du premier sillon du disque.)
3. Mettre le commutateur d'élévation de bras dans la position [▼].
4. A l'aide d'un petit tournevis, tourner avec précaution la vis de réglage selon la direction et le degré de déplacement, ainsi qu'il est indiqué ci-dessous:
   - La position de la pointe est corrigée de 10mm par 1/2 tour de vis.
   - Si le déplacement est en direction de l'extérieur du disque, tourner la vis dans le sens horaire vu d'en-haut.
   - Si le déplacement est en direction de l'intérieur du disque, tourner la vis à l'opposé du sens horaire vu d'en-haut.
5. Vérifier le réglage.
   Après avoir termine le réglage, pousser doucement la cellule dans la direction de la flèche et vérifier qu'elle s'arrête en position sur les premiers sillons du disque. (Le bras se déplace vers la position d'arrêt en mode de lecture.)

Précautions de réglage.

- Ne par renverser la platine ni trop l'incliner.
- Ne pas donner trop de force en tournant la vis de réglage.

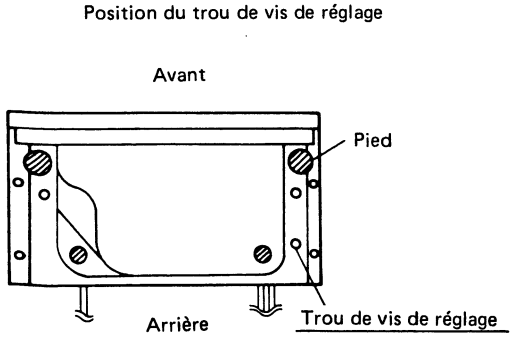


Fig. 12-1 Position du trou de vis de réglage

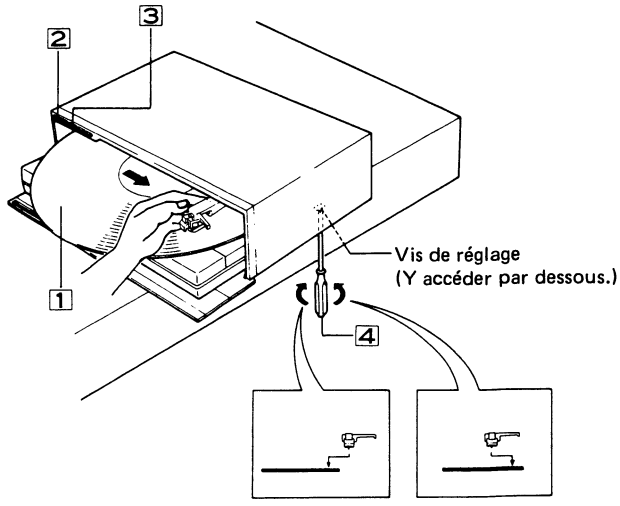


Fig. 12-2 Réglage de la position de la pointe

12.2 RÉGLAGE DE LA HAUTEUR D'ÉLÉVATION DU BRAS DE LECTURE

Tourner la vis de réglage comme indiqué sur la Fig. 12-3. pour effectuer le réglage de la hauteur d'élévation du bras de lecture. Tourner la vis dans la direction CW pour diminuer la hauteur et tourner la vis dans la direction CCW pour augmenter la hauteur. La hauteur doit être réglée de manière que la pointe de lecture soit à 7 ±2mm de la surface du disque. La pointe de lecture peut éventuellement frotter sur le disque lorsque le bras revient sur sa position de départ si la hauteur au dessus du disque est trop faible. En général, ce réglage n'est pas nécessaire mais il doit être effectué avant le réglage de la position de descente de la pointe de lecture en cas de nécessité de réglage.

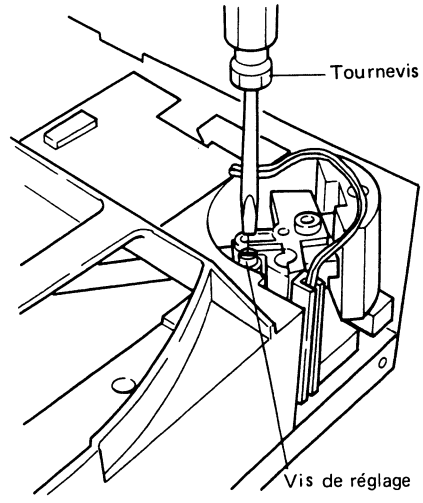


Fig. 12-3 Réglage de la hauteur d'élévation du bras

12.3 RÉGLAGE DU MONTAGE DE DÉTECTEUR DE FIN

1. Régler toujours la position d'abaissement de la pointe avant de régler le montage de détecteur de fin.
   Déposer le capot de la platine.
2. Mettre le PL-X5 en mode de lecture, puis couper l'alimentation.
   Débrancher également l'ensemble de plaque de montage (CN) afin d'empêcher un mouvement du mécanisme et des moteurs phono.
3. Brancher un voltmètre CC sur le TP1 (masse) et sur les bornes TP2 (Voir Fig. 12-4)
   Puis, remettre l'alimentation et déplacer le bras de telle sorte que la pointe se trouve à 47,5mm de l'axe central. Lire la tension à ce moment (Voir Fig. 12-5).
4. Puis déplacer le bras à 57,5mm de distance de l'axe central et régler VR3 de telle sorte que la tension lue soit de 5,8V±0,2V plus basse que la tension lue en etape 3 ci-dessus.

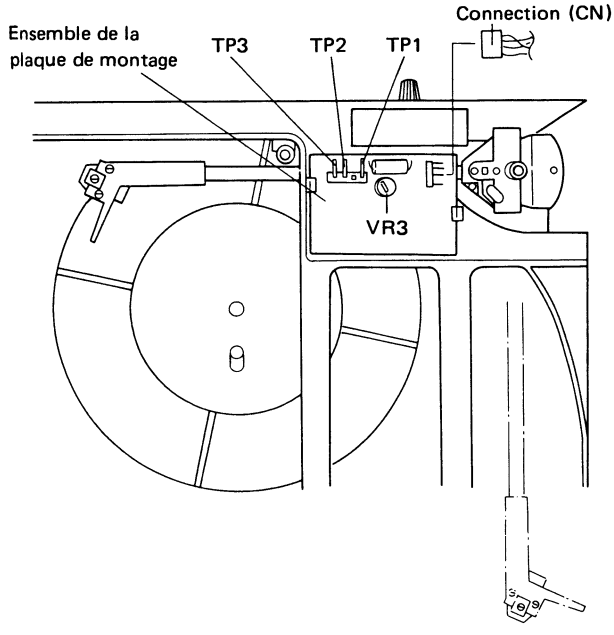


Fig. 12-4 Réglage 1 du détecteur de fin

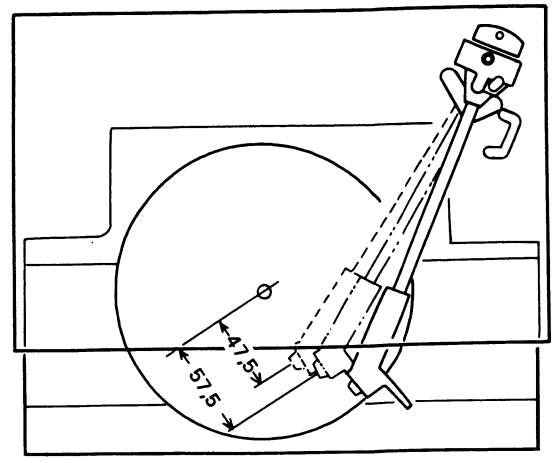


Fig. 12-5 Réglage 2 du détecteur de fin

12.4 RÉGLAGE DE LA VITESSE DU MOTEUR PHONO

1. Placer un stroboscope sur la table et mettre le courant.
2. Régler la vitesse au moyen du réglage VR à l'arrière du PL-X5. Un court-circuit du VR sur le panneau arrière au moyen d'un tourne-vis, au cours du réglage, peut produire un changement de la vitesse. Si le tournevis est métallique, il est recommandé d'entourer la tige de bande isolante afin d'éviter un contact direct avec le panneau arrière. (Voir Fig. 12-6)

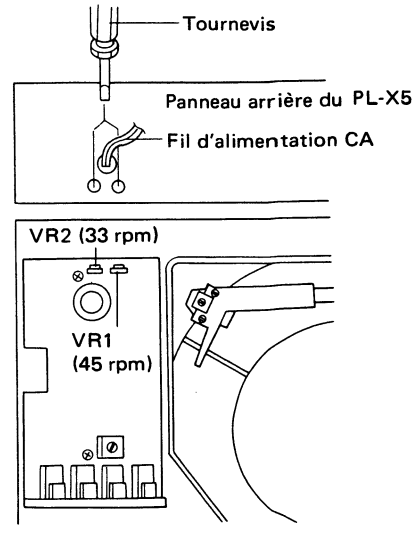


Fig. 12-6 Réglage de la vitesse du moteur phono

12. AJUSTE

12.1 AJUSTE DE LA POSICIÓN DE DESCENSO DE LA AGUJA

Si la aguja no desciente en la posición correcta sobre el disco en el modo de reproducción normal, ajustar la posición siguiendo el procedimiento siguiente. Tener cuidado de no dañar la aguja ni el disco durante este ajuste.

1. Presionar el botón START/STOP para iniciar el modo de reproducción.
2. Observar la dirección y grado de desplazamiento (es decir, estimar cuántos mm queda la aguja desplazada del surco de inicio del disco).
3. Poner el interruptor de elevación del brazo en la posición [▼].
4. Empleando un destornillador pequeño, girar con cuidado el tornillo de ajuste de acuerdo con la dirección y grado de desplazamiento como se indica a continuación.
   - La posición de descenso de la aguja se corrige en unos 10mm con media vuelta del tornillo de ajuste.
   - Si el desplazamiento es hacia el borde exterior del disco, girar el tornillo de ajuste hacia la derecha mirándolo desde arriba.
   - Si el desplazamiento es hacia el centro del disco, girar el tornillo de ajuste hacia la izquierda mirándolo desde arriba.
5. Comprobar el ajuste
   Después de haber completado el ajuste, presionar suavemente el cabazal fonocaptor en el sentido de la flecha y comprobar que se pare en la posición del surco de inicio exterior del disco (el brazo fonocaptor se elevará a la posición de parada durante el modo de reproducción).

Precauciones con el ajuste

- No poner boca abajo el giradiscos ni inclinarlo demasiado hacia uno de sus lados.
- No aplicar demasiada presión al girar el tornillo de ajuste.

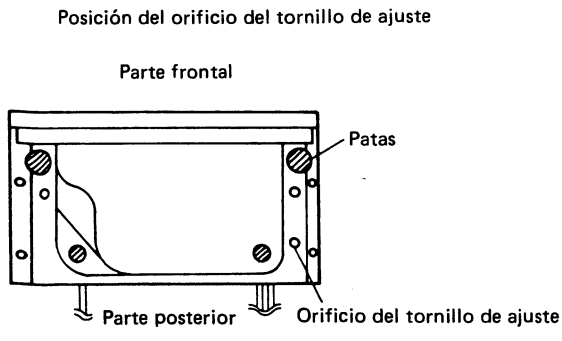


Fig. 12-1 Posición del orificio del tornillo de ajuste

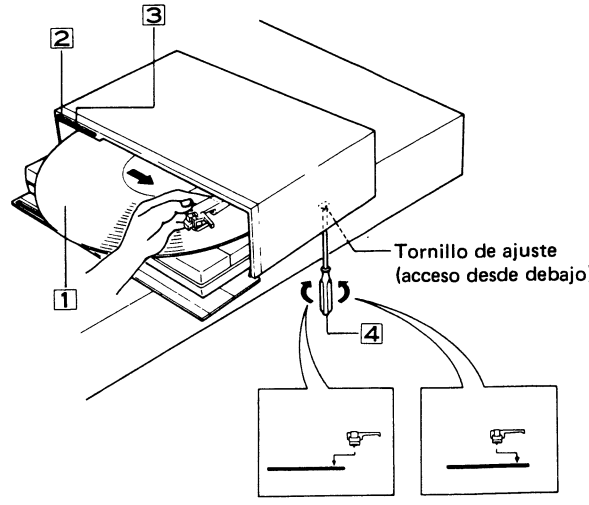


Fig. 12-2 Ajuste de la posición de descenso de la aguja

12.2 AJUSTE DE LA ALTURA DE ELEVACIÓN DEL BRAZO

El ajuste de la altura del asiento de elevación se realiza girando el tornillo de ajuste como se muestra en la Fig. 12-3. Girando el tornillo hacia la derecha se hace descender la altura, y girándolo hacia la izquierda se eleva. La altura deberá ajustarse de modo que la aguja esté 7 ±2mm sobre el disco. Si la altura es demasiado baja, la aguja puede marcar el disco durante el movimiento de retorno. Generalmente no se requiere este ajuste, sin embargo, deberá realizarse antes de ajustar la posición de descenso de la aguja cuando éste resulte necesario.

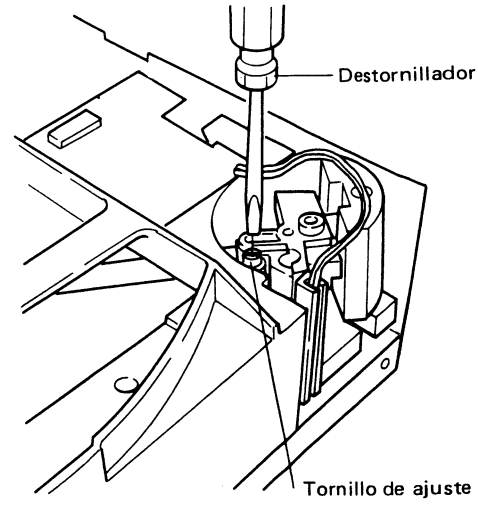


Fig. 12-3 Ajuste de la altura de elevación del brazo

12.3 AJUSTE DEL CIRCUITO DETECTOR DE FIN

1. Ajustar siempre la posición de descenso de la aguja antes de ajustar el circuito detector de fin.
   Sacar la cubierta del mueble del giradiscos.
2. Poner el PL-X5 en el modo de reproducción, y luego desconectar la alimentación.
   Desconectar también el conector del ensamble de la tarjeta de circuitos (CN) para evutar el movimiento en el mecanismo y motores de fono.
3. Conectar el voltímetro de CC a los terminales TP1 (GND) y TP2 (Ver la Fig. 12-4).
   Luego, conectar de nuevo la alimentación y mover el brazo fonocaptor de modo que la aguja quede en una posición a 47,5mm del pivote central. Leear la tensión en este momento en el voltímetro (ver la Fig. 12-5).
4. Luego, mover la punta de la aguja del brazo fonocaptor a una posición que esté 57,6mm del pivote, y ajustar VR3 de modo que la tensión indicada en esta posición sea de 5,8V ±0,2V inferior a la tensión indicada en el paso 3 anterior.

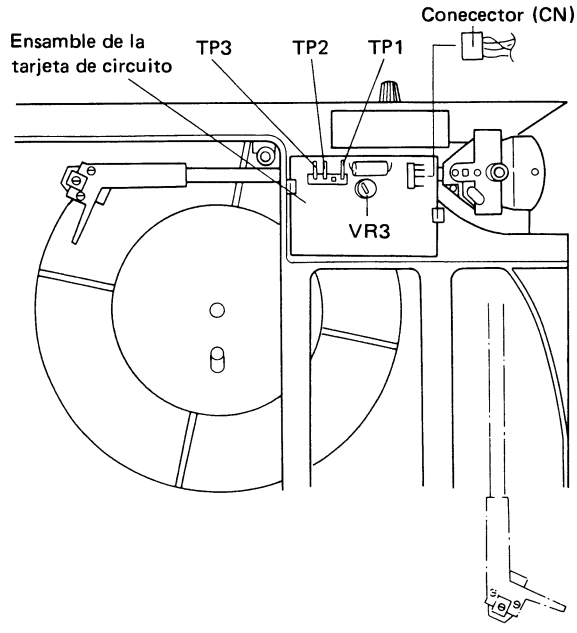


Fig. 12-4 Ajuste 1 del detector de fin

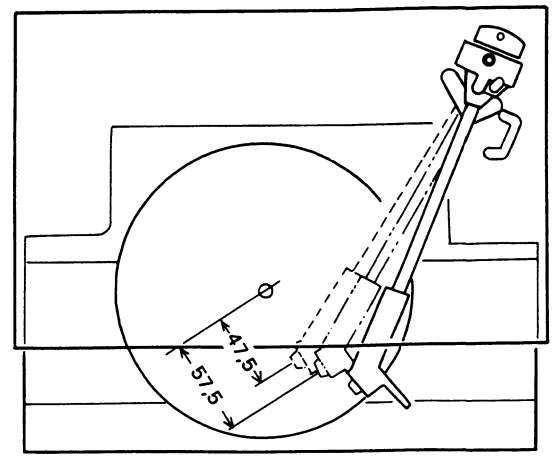


Fig. 12-5 Ajuste 2 del detector de fin

12.4 AJUSTE DE LA VELOCIDAD DEL MOTOR DE FONO

1. Poner un estroboscopio en el plato del giradiscos y conectar la alimentación.
2. Ajustar el VR de ajuste de la velocidad desde detrás del PL-X5. El cortocircuito de VR con el panel posterior a través del destornillador durante este ajuste puede ocasionar un cambio del ajuste de la velocidad. Si se utiliza un destornillador metálico, se recomienda que el eje del destornillador esté enrollado con cinta aislante, y que se eviten el contacto directo entre el destornillador y el panel posterior. (Ver la Fig. 12-6)

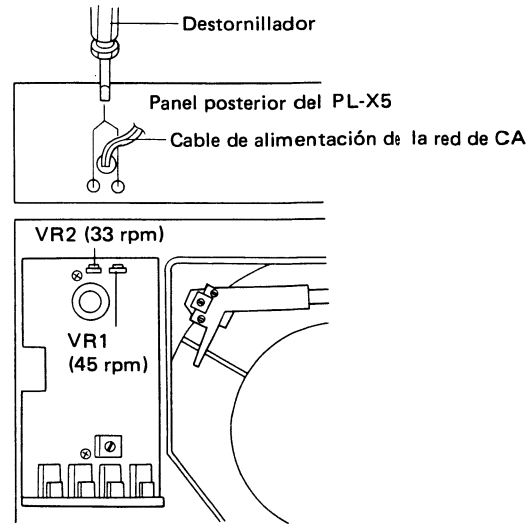


Fig. 12-6 Ajuste de la velocidad del motor de fono

13. FOR S AND KU TYPE

PL-X5/S and PL-X5/KU are the same as PL-X5/HE with the exception of the following sections.

13. 1 SPECIFICATIONS

S type

Miscellaneous

Power Requirements ..... AC 110/120/220/240V (switchable), 50, 60Hz

KU type

Power Requirements ..... AC 120V, 60Hz

13. 2 PARTS LIST

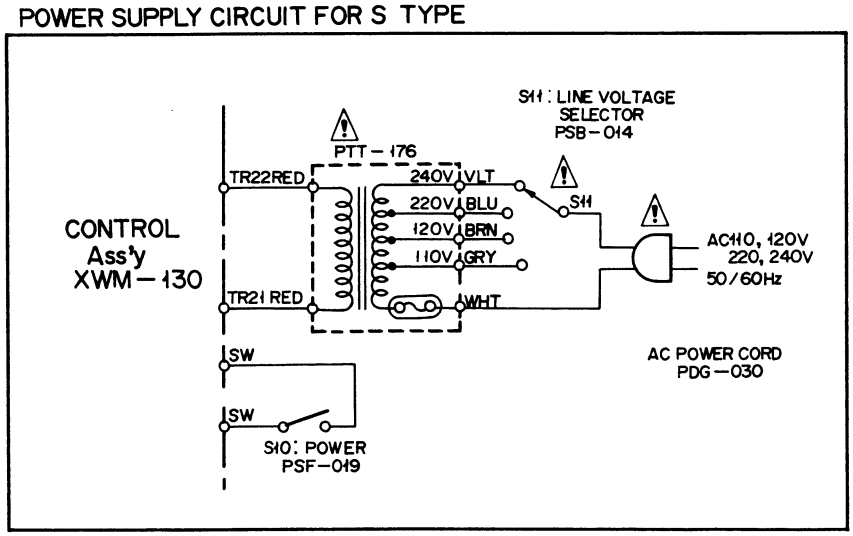
Contrast of Miscellaneous Parts

Mark	Symbol & Description	Part No.			Remarks
		PL-X5/HE	PL-X5/S	PL-X5/KU	
	Front panel	PNY-021	PNY-041	PNY-041	
⚠ ★	Power transformer (220/240V)	PTT-161	. . . .	. . .	
⚠ ★	Power transformer (110/120/220/240V)	. . .	PTT-176	. . .	
⚠ ★	Power transformer (120V)	. . .	. . .	PTT-166	
⚠	Power cord	PDG-033	PDG-030	PDG-050	
⚠	Line voltage selector	PSB-013	PSB-014	. . .	
	Packing case	PHH-024	PHH-024	PHH-030	
	Operating instructions (English/German/French/Italian)	PRE-006	. . .	. . .	
	Operating instructions (English/Spanish)	. . .	PRE-011	. . .	
	Operating instructions (English)	. . .	. . .	PRB-227	

13. 3 SCHEMATIC DIAGRAMS

S type

POWER SUPPLY CIRCUIT FOR S TYPE



KU type

POWER SUPPLY CIRCUIT FOR KU TYPE